



Picking Up the Pace Toward Zero Waste



Zero Waste



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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June 25, 2013

Mr. Timothy Croll  
City of Seattle  
Seattle Public Utilities  
700 5<sup>th</sup> Avenue, Suite 4900  
Seattle, WA 98124

**RE: Ecology Approval of Seattle's Comprehensive Solid Waste Management Plan, Final Draft 2011**

Dear Mr. Croll:

Ecology is pleased to approve Seattle's Comprehensive Solid Waste Management Plan, submitted for final review and consideration on May 24th, 2013. Ecology commends you for addressing all of the solid waste planning elements in the Plan update.

This Plan demonstrates Seattle's continued leadership in state solid waste management, prevention and policy development. Your extensive public involvement process and user-friendly graphics have enhanced the Plan's accessibility and use by Seattle's diverse stakeholders.

Lastly, your program goals and recommendations are thorough, forward thinking and strategic. The accompanying economic models which forecasted both financial and environmental benefits of your waste prevention and recycling recommendations are cutting edge and reflect Seattle's commitment to sustainability.

Sincerely,

Peter D. Christiansen  
W2R Section Manager

Cc: Vicky Beaumont, Seattle Public Utilities  
Taisa Welhasch, WA Department of Ecology





# Acknowledgements

## Mayor

The Honorable Michael McGinn

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Sally Bagshaw  
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# Artwork from Seattle Public Utilities Portable Works Collection

Photos: Mike Spafford



Kate Hunt  
*Flathead Grid No. 1*, 2007  
Newspaper, steel, encaustic, twine  
12 x 12 x 4.5 inches



Deborah Faye Lawrence  
*Tend & Befriend Utopia Tray*, 2007  
Acrylic, recycled paper collage and varnish on recycled tin TV tray  
21.75 x 15.75 inches



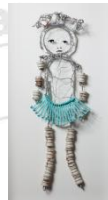
Ross Palmer Beecher  
*Candy Cobweb Quilt*, 2003  
Wire-stitched metal, paint wood, costume jewelry and found objects  
35 x 35.5 x 3 inches



Julia Haack  
*Tracks 2*, 2009  
Latex paint on salvaged wood  
54 x 44 x 3 inches



Evan Blackwell  
*The Disposable Heroes series*, 2005  
Various plastics  
22 x 10 x 17 inches



Marita Dingus  
*Outdoor Baby (hanging)*, 2010  
Pull tabs, champagne wire muselet, electric ceramic tubes, plastic curler attachments, glass  
26 x 9 x 3 inches



Evan Blackwell  
*Untitled Eusapia*, 2010  
Wood window frames  
36 x 38 x 2.5 inches



Marita Dingus  
*Fence with Rubber, Yellow and Green Plastic and Spools*, 2011  
Rubber strips, plastic objects, wood beads, buttons, thread spools, plastic dental trays  
25 x 23 x 2 inches

# Table of Contents

## Executive Summary

### Chapter 1 Revising the Plan

- 1.1 What's Being Revised
- 1.2 Planning History Overview
- 1.3 Planning Process – Continuing the Vision and Goals

### Chapter 2 Seattle Solid Waste Trends

- 2.1 Physical Environment
- 2.2 Human Environment
- 2.3 Waste Definitions
- 2.4 MSW Recycling Measurement
- 2.5 Waste and Recycling Trends

### Chapter 3 Waste Prevention

- 3.1 Recommendations from 1998 Plan and 2004 Amendment
- 3.2 Planning Issues for this Update
- 3.3 Current Programs and Practices
- 3.4 Alternatives and Recommendations
- 3.5 Measurement

### Chapter 4 Seattle's MSW System: Managing Discards

- 4.1 Where MSW Starts and Ends
- 4.2 Collection
- 4.3 Recycling
- 4.4 Transfer Facilities
- 4.5 Processing and Disposal
- 4.6 Surveillance and Control (Enforcement)
- 4.7 Emergency Management

### Chapter 5 Other Seattle Solid Waste Programs

- 5.1 Construction and Demolition Debris
- 5.2 Historic Landfills
- 5.3 Clean City Programs
- 5.4 Moderate Risk Waste
- 5.5 Special Waste

### Chapter 6 Plan Administration and Financing

- 6.1 Organization and Mission of Seattle Public Utilities
- 6.2 Education
- 6.3 Financing the Plan

## Appendices

Appendix A: Glossary

Appendix B: *Zero Waste Resolution* (Resolution # 30990)

Appendix C: Public Involvement

Appendix D: Recycling Potential Assessment (RPA) Model and Environmental Benefits Analysis

Appendix E: Recycling Businesses Reporting

Appendix F: State Environmental Protection Act (SEPA) Documents

Appendix G: Seattle Solid Waste Advisory Committee (SWAC) Participation

Appendix H: Resolution of Adoption





## List of Acronyms

|        |                                                     |
|--------|-----------------------------------------------------|
| ADC    | alternative daily cover                             |
| BIA    | business improvement area                           |
| BPA    | bisphenol A                                         |
| C&D    | construction and demolition                         |
| CESQG  | conditionally exempt small quantity generator waste |
| CFC    | chlorofluorocarbons                                 |
| CFP    | capital facilities plan                             |
| CIP    | capital improvement program                         |
| COOP   | Continuity of Operations Plan                       |
| DOC    | Department of Corrections                           |
| DPD    | Department of Planning and Development              |
| DRRP   | Disaster Readiness and Response Plan                |
| EJNA   | Environmental Justice Network in Action             |
| EJSE   | Environmental Justice and Services Equity           |
| EOW    | every other week                                    |
| EPR    | Extended Producer Responsibility                    |
| EPS    | expanded polystyrene (Styrofoam)                    |
| FEMA   | Federal Emergency Management Agency                 |
| FORC   | Friends of Recycling and Composting                 |
| G&A    | General and Administrative                          |
| G&E    | General Expense                                     |
| HHW    | household hazardous waste                           |
| HMA    | hot mix asphalt                                     |
| IPM    | integrated pest management                          |
| IWS    | industrial waste stabilization                      |
| LEED   | Leadership in Energy and Environmental Design       |
| LFG    | landfill gas                                        |
| LHWMP  | Local Hazardous Waste Management Program            |
| MID    | Metropolitan Improvement District                   |
| MOAs   | memoranda of agreement                              |
| MRF    | materials recovery facility                         |
| MRW    | moderate risk waste                                 |
| MSW    | municipal solid waste                               |
| MTBE   | methyl tert-butyl ether                             |
| NNYD   | Northwest Natural Yard Days                         |
| NRDS   | North Recycling Disposal Station                    |
| NTS    | North Transfer Station                              |
| NWPSC  | Northwest Product Stewardship Council               |
| O&M    | operations and maintenance                          |
| OCA    | Office of City Auditor                              |
| OCC    | old corrugated cardboard                            |
| PH:ARM | Pharmaceuticals from Households: A Return Mechanism |
| PSI    | Product Stewardship Institute                       |
| PVC    | polyvinyl chloride                                  |
| RAS    | recycled asphalt shingles                           |
| RCW    | Revised Code of Washington                          |
| RPA    | Recycling Potential Assessment                      |
| RTO    | Recovery Time Objectives                            |
| SEPA   | State Environmental Policy Act                      |
| SMC    | Seattle Municipal Code                              |

|      |                                  |
|------|----------------------------------|
| SPU  | Seattle Public Utilities         |
| SRDS | South Recycling Disposal Station |
| STS  | South Transfer Station           |
| SWP  | Solid Waste Plan                 |
| WMI  | Waste Management Incorporated    |

# Executive Summary

This Plan revises Seattle's 1998 Solid Waste Management Plan, *On the Path to Sustainability*, as amended in 2004. The overall direction in the Plan remains the same. However, this update presents an opportunity to step back and take a deep look at our system and the possibilities for the future.

Properly managed solid waste protects public health and the environment. This Plan describes how Seattle will manage the city's solid waste over the next 20 years. It projects Seattle's needs for solid waste services and facilities. And the plan describes how those needs will be met and paid for. It also serves as a way to communicate planned solid waste strategies to the public and decision-makers. Washington State law requires the Plan.

## Organization of this Plan

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Readers of the 1998 Plan and 2004 Amendment will notice this Plan is organized somewhat differently. This Plan also goes into more depth on some topics. Seattle Public Utilities (SPU) saw this revision as a chance to create an extended resource document. Not only will it guide the work of the city's solid waste managers, the Plan will be a place to refer questions about Seattle's solid waste system. Seattle is an internationally recognized leader in solid waste management. As such, SPU frequently fields questions from across the nation and other countries.

The Plan is organized into 6 chapters as follows:

- Chapter 1 — Revising the Plan
- Chapter 2 — Seattle Solid Waste Trends
- Chapter 3 — Waste Prevention
- Chapter 4 — Seattle's MSW System: Managing Discards
- Chapter 5 — Other Seattle Solid Waste Programs
- Chapter 6 — Administration and Financing

These chapters describe in some detail major areas of solid waste management for the City of Seattle and list program recommendations. Chapter 1 briefly explains how this version of the solid waste management plan fits in with the previous plans. Chapter 2 lays out various trends as they have emerged from SPU research into what is new in solid waste generation in Seattle. Chapter 3 discusses waste prevention and its transitioning role in managing discards. Chapter 4 talks about what SPU does with the typical household and business waste that is produced in the

## Executive Summary

city. Chapter 5 takes on other wastes the SPU system needs to manage. And finally, Chapter 6 discusses the Plan's future and financing.

New in this Plan is a summary matrix for the Plan's many recommendations. The Plan's chapters contain several strategies for reducing waste, for increasing recycling, and for managing the solid waste system. The recommendations matrix should help reviewers more quickly identify and better comment on their areas of concern. Full explanations of recommendations are contained in the relevant chapters. Key recommendations are highlighted throughout the Executive Summary.

The Plan features eight appendices:

- Glossary
- Zero Waste Resolution
- Public Involvement
- Recycling Potential Assessment (RPA) Model and Environmental Benefits Analysis
- Recycling Businesses Reporting
- State Environmental Policy Act (SEPA) Documents
- Seattle Solid Waste Advisory Committee (SWAC) Participation
- Resolution of Adoption

The information in these documents supports the Plan and its wide audience. The Plan has many purposes beyond its need to meet regulatory requirements. It must explain to the public how current and future programs work. The Plan aids City of Seattle staff in preparing and running solid waste programs. And it helps decision-makers in the City Council and SPU leadership select among the many options that will pick up the pace toward zero waste.

## Revising the Plan

SPU started updating this Plan by reviewing past goals and plans, and taking stock of changes in the rules and regulations that bear on Seattle solid waste planning. To gather a range of public perspectives, we built early stakeholder involvement into our update process.

Various state and local regulations and guidelines influence Seattle's solid waste planning. Chief among the regulations is the State of Washington's 1969 legislation Revised Code of Washington (RCW) 70.95 requiring local solid waste plans. Local plans provide strategies for future solid waste management needs.

Until 1988, the City of Seattle prepared its solid waste plan as part of King County's local plan. In 1989, Seattle began its independent planning for solid waste management with the *Integrated Solid Waste Management Plan*. Ten



years later the city prepared the 1998 Solid Waste Management Plan, *On the Path to Sustainability*, which was updated by the 2004 Plan Amendment.

This 2011 Plan revises the 1998 Plan, capturing the trends in and influences on solid waste management since 2004. Washington State updated its solid waste plan *Beyond Waste* in 2009, and in 2010 published its new *Guidelines for Development of Local Comprehensive Solid Waste Management Plans and Plan Revisions*.

Locally, the Seattle City Council adopted Resolution 30990 (the *Zero Waste* resolution) in 2007. The resolution moved the City of Seattle's 60% recycling goal to 2012 (previously 1998, then 2008 and 2010). It also added actions and strategies for reaching the goal and set a new goal of 70% recycling by 2025.

Even though the planning backdrop has evolved, the basic concepts in Seattle's 1998 Plan prevail. This Plan upholds the 1998 Plan's key concepts of zero waste, waste prevention, sustainability, and product stewardship. The 2004 Amendment updated the 1998 Plan by accenting a streamlined municipal solid waste (MSW) system, food and yard waste (organics) diversion, and product stewardship.

The process to produce this Plan followed the steps of past plans. It involved a wide range of stakeholders, including the Seattle Solid Waste Advisory Committee, citizens, the solid waste industry, other interest groups, and staff from city departments. The Seattle City Council adopts the Plan before the Washington State Department of Ecology (Ecology) reviews and approves it.

The process to maintain the Plan will comply with state regulations. SPU will review the Plan at least as often as required by RCW 90.95, which is currently every 5 years. SPU and Ecology will confer as to whether the 5-year review calls for a Plan amendment or revision.

Further, SPU reviews progress yearly via an Annual Recycling Report. If programs do not perform as expected, we will figure out what the problems are and seek solutions. The desired solutions could potentially lead SPU to pursue a policy change that is significantly different from, or not contemplated in, this Plan. In that case, or because of other update triggers, we will confer with Ecology as to whether the change calls for a Plan amendment or revision.

## Seattle Solid Waste Trends

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Several major trends have emerged from the analysis for solid waste program planning. Over the next 20 years, Seattle's population will increase, with more growth in multi-family housing than in single-family housing.

And employment will shift away from manufacturing to more office-type business, health care, and services.

Seattle's waste generation tends to go up and down with the economy, as it did through the recent recession. Waste volumes will climb back up slowly from pre-recession levels.

### Where does SPU get Data?

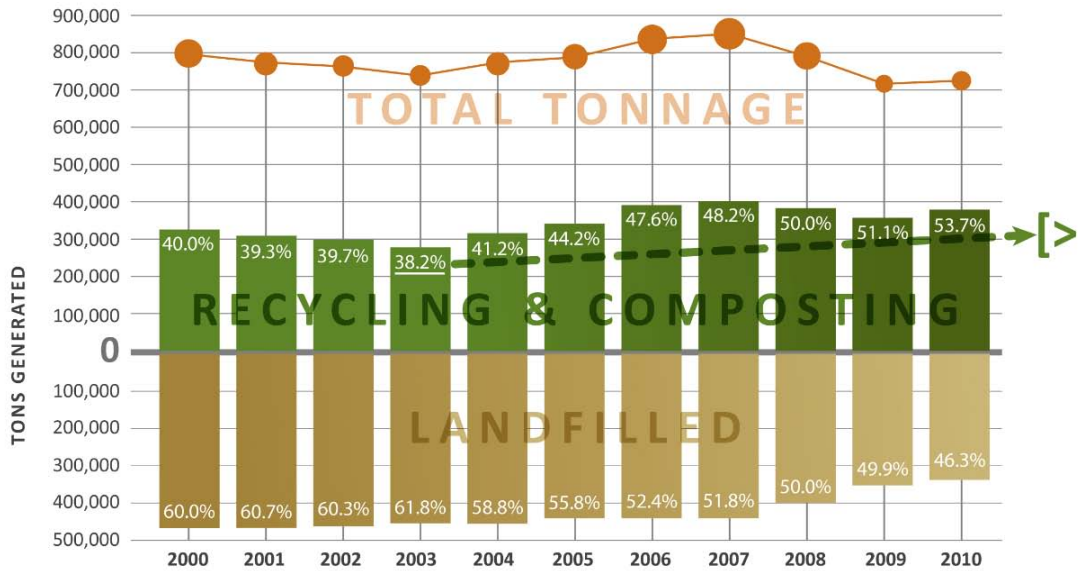
SPU uses a robust array of data and modeling tools to track recycling progress and analyze future programs. Data sources include routine detailed reports from SPU's contracted collectors and processors, and yearly reports from recycling businesses.

To see what people are putting in the garbage, SPU conducts waste composition studies on 4-year cycles by sector.

SPU's Seattle Discards model analyzes recycling program performance. The Recycling Potential Assessment model analyzes future programs. And we gather waste prevention data on a program-by-program basis.

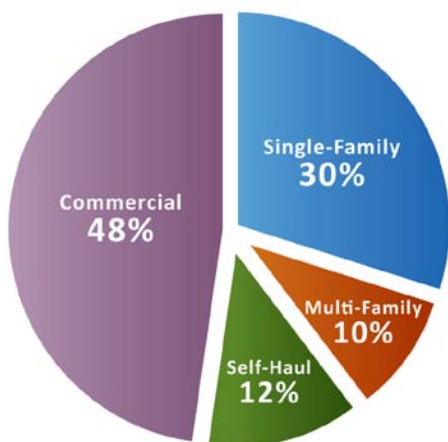
Even with the most recent economic fluctuations, recycling has steadily increased since 2003, reaching 53.7% in 2010, Seattle’s highest recycling rate yet.

### Seattle’s Recycling Rate Continues to Climb



Four municipal solid waste (MSW) sectors contribute to the total waste generated in Seattle. They are the single- and multi-family residential, self-haul, and commercial sectors. In terms of total generated tons, the commercial sector is the largest, followed by the single-family sector.

### Seattle’s MSW Generation by Sector 2010



As of 2010, the single-family sector recycled 70.3% of its waste. The multi-family sector recycled 29.6%, and the self-haul sector recycled 13.7%. The commercial sector recycled 58.9%.

## Waste Prevention

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SPU's waste prevention programs work to reduce waste volumes from households and businesses. These programs are sometimes referred to as waste reduction or *precycling*. Waste prevention programs also seek to reduce toxics in goods purchased by people, institutions and businesses. SPU's waste prevention programs include product stewardship activities, which seek increased producer responsibility for wastes.

SPU continues to organize waste prevention activities into programs for reuse, onsite organics management, sustainable building, and product stewardship. The 2007 *Zero Waste Resolution* drove several new waste prevention activities, with special focus on product stewardship. Waste prevention initiatives for the future build on existing programs to stretch for more results.

### Reuse

Reuse includes programs to increase the amount of reusable goods that stay out of the garbage and go to places that can resell or use them. Reuse also includes developing end-markets for salvaged materials. Recommendations to increase reuse mainly focus on bolstering current programs.

**Reuse** recommendations include:

- Continuing and enhancing programs at the city's transfer stations to divert more materials before they enter the station, and to direct construction and demolition (C&D) loads to C&D recycling processors
- Continuing involvement and support for industrial commodities exchange
- Continuing and enhancing programs to divert reusables to charities
- Increasing electronics diversion by adding more products to Washington State's electronic product recycling law, and by promoting private donation of electronic products to places that refurbish them

### Sustainable Building

Sustainable building programs largely address wastes from C&D. Supporting Green Building and LEED (Leadership in Energy and Environmental Design) helps building design meet goals for longevity, reuse, and recycling. Meeting such standards also requires more effort to reduce, reuse, and recycle building materials. SPU collaborates with the City of Seattle Department of Planning and Development (DPD) on sustainable building programs. One program includes changes to building permitting that removes disincentives to deconstruction and salvage and promotes reuse and recycling.

**Sustainable building** recommendations include:

- Continuing to expand C&D prevention and recycling programs. This includes developing grading standards for dimensional lumber and promoting house moving.
- Supporting the initiatives listed under C&D in this Plan

## Onsite Organics

Two long-standing SPU programs—backyard composting and grasscycling—have been mainstays in helping customers to manage food and yard waste at home.

In recent years, SPU expanded onsite organics management by working with commercial food vendors. A 2008 law (Ordinance 122751) that requires quick-serve restaurants to use compostable or recyclable packaging reduces food-packaging waste. The law has also led more businesses to request organics pick-up service.

Another short-term SPU program helped large commercial kitchens to reduce food orders by tracking what was really needed.

Also, several commercial food businesses now donate surplus food to hunger-relief agencies. Recommendations to increase organics management carry forward mature programs and support the ramp up of new ones.



**Onsite organics** recommendations include:

- Continuing to promote backyard composting and grasscycling
- Continuing programs for commercial food businesses to donate edible food to feeding programs. Supporting feeding programs that keep food fresh and that compost leftovers. Helping commercial kitchens find efficiencies
- Focusing community grants on schools to increase food and yard waste collection
- Supporting schools and business to comply with food packaging regulations so that all food serve-ware is either recyclable or compostable

## Product Stewardship

The City of Seattle supports a product stewardship approach to product end-of-life management through the Northwest Product Stewardship Council (NWPSC). The NWPSC is a coalition of governmental organizations that conducts studies and promotes product stewardship programs and policies. Product stewardship places responsibility and costs on producers and users of various products rather than on solid waste ratepayers.

SPU product stewardship activity ranges from supporting recycling laws (e.g. electronics, mercury-containing lighting), to education and take-back programs. SPU has also pursued action on disposable bags and food service ware as well as yellow pages phone book and junk mail opt-out registries. Based on a recent study, SPU has a list of other problem products to pursue for product stewardship as funding allows. Product stewardship recommendations support current approaches and build a framework for future actions.



**Product stewardship** recommendations emphasize:

- Developing a strategic framework for product stewardship actions
- Continuing to work with the NWPSC to promote product stewardship, and increase the range and effectiveness of product stewardship at the state level
- Continuing to support national dialogues through the Product Stewardship Institute
- Pursuing local regulation for select products when state and regional action is not forthcoming
- Tracking efforts toward product stewardship solutions, for example, producer fees for products commonly found in the city's curbside collection programs

## Other Waste Prevention Programs

Other waste prevention programs focus on market development, support for the community, and the City of Seattle's own practices. Market development increases demand for targeted recycled materials such as carpet, plastic film wrap and asphalt shingles. Community matching grants support community-based waste prevention and recycling projects. SPU's Resource Venture, a contracted service, promotes conservation and provides technical assistance to businesses. SPU's new opt-out program, which consists of two registries—one for junk mail and the other for yellow pages out-out—helps residents and businesses reduce paper waste.

The City of Seattle Green Purchasing program helps city departments buy products that contain recycled content, are less toxic, are recyclable, and come with minimal packaging. The city's own program to reduce paper use, Paper Cuts, is now ingrained and no longer needs to continue. The recommendations for these other waste prevention programs mainly build on and expand existing programs.

**Other waste prevention** recommendations include:

- Expanding city green purchasing efforts to city facilities construction and standard specifications for work in the public right-of-way
- Continuing to seek packaging waste reduction and aggressive controls on chemicals
- Continuing the online junk mail and yellow pages phone books opt-out service, and working with phone book businesses to change Washington State regulations that require white pages phone book delivery

Additional recommendations for waste prevention are in the next section under [recycling](#).

## Seattle's MSW System: Managing Discards

A network of public and private service providers and facilities collect, transfer, process, and landfill the city's discards. At each stage in the municipal solid waste (MSW) system, SPU makes choices about how to handle the materials. Our programs reflect our decisions. Many of this Plan's recycling recommendations will affect collection programs. Transfer will improve with the rebuilt stations. SPU will continue to use contracting as its strategy for processing and landfill disposal.

### What is MSW?

Municipal Solid Waste, abbreviated as MSW, is solid waste that includes garbage, recycling, and organic material discarded from residential and commercial sources.

### Collection

Collection is the stage in Seattle's MSW system at which SPU can most influence customer decisions and behaviors. New contracts begun in 2009 are the biggest change in collection since the 2004 Plan amendment. SPU contracted with a new collector and added to the list of accepted recyclables. The single-family sector added weekly organics pick-up, and meat and dairy were added to accepted organics for all customers. And most customers' collection day changed.



**Single-Family Sector Collection.** Single-family collection programs pick up garbage, recycling, and food and yard waste (organics). Households must sign up for garbage and organics service.

Customers automatically sign up for recycling with their garbage service. They may choose from several sizes of cans or carts. Price goes up with can size to encourage waste reduction and recycling. SPU's collection contractors pick up garbage and organics every week, and recycling every other week. SPU also supplies other pick-up services for extra large volumes, and for used motor oil and electronics.



**Multi-Family Sector Collection.** Multi-family collection services vary

according to a building's needs and space constraints. The City of Seattle requires multi-family buildings to subscribe to garbage service. Recycling service is available at no charge to multi-family buildings. Organics service was optional in this sector until September 2011, when it became a requirement. A building's needs determine container size and collection frequency, which determine the monthly fee. Price goes up with container size and collection frequency to encourage recycling.



**Self-Haul Sector Collection.** Self-haul customers include businesses who haul their own discards, and residential customers who have quantities of materials or materials unsuitable for curb service. The largest portion of self-hauled materials comes from commercial businesses and large institutions. Self-haulers collect their own materials and bring them to the city's two transfer stations.



**Commercial Sector Collection.** In the commercial sector, garbage is handled much as it is for residences. City collection contractors pick up from dumpsters of various sizes at least weekly and transfer the garbage at the two Seattle transfer stations. The monthly fee depends on container size and how often the container is picked up. Commercial businesses do not have to subscribe to garbage collection service. They can self-haul to a city or private transfer station.

Commercial recycling service is not required. Paper and cardboard, however, are not allowed in the garbage. For businesses, most recyclables are collected by a wide range of collectors using a variety of container types and sizes. The collectors take the materials to many types of transfer and processing facilities, and brokers.

A small part of this waste stream uses the same cart-based, city-contracted, bi-weekly collection service provided for the city's residential curbside recycling service. The city offers this service at no additional charge. Commercial customers with organics may choose city or private collection service.

Collection recommendations for this Plan aim either to increase recycling or to address the collection system structure.

**Collection-related recycling** strategies target a range of actions in different sectors:

- Enhancing and increasing education. Increasing awareness of customer options such as free extra set-outs for recycling and larger recycling carts
- Increasing enforcement
- Banning certain materials from disposal in garbage
- Introducing pet waste and diaper composting

**Collection system structure** recommendations include:

- Continuing to contract for collection services
- Continuing to monitor collection performance
- Considering changing single-family garbage collection from weekly to every other week after evaluating 2012 pilot project

Many recycling recommendations span the residential, commercial, and self-haul sectors. To avoid repetition, all recycling recommendations are in one list in the following section on [recycling](#).

## Recycling

Recycling keeps precious resources out of the landfill by turning them into usable or marketable materials. While Seattle’s recycling rates are among the highest in the nation, there’s still more that we can do. The assertive recommendations in this Plan will take Seattle to new levels in city recycling.

Recycling isn’t a program in itself. Instead, it is a strategy carried out in waste prevention, market development, collection, processing, education, and other programs. Seattle is still working toward the 60% recycling goal set in the prior Plan and in the *Zero Waste Resolution*.





Each sector differs in what remains to be recycled from the garbage, and different factors shape recycling program design.

SPU analyzed several potential new recycling programs. The recommendations that resulted include keeping existing programs, implementing new ones in a phased manner, and

adjusting recycling goal years to align with projected achievement of 60% by 2015 and 70% by 2022. Each recommendation targets certain materials in the different sectors. Implementation is phased. Note: For some recommendations, SPU has chosen to move up the start year from that assumed in the analysis.



## Recommended New Recycling Programs

|       |                                                                           | Single-Family                                                                     | Multi-Family                                                                       | Self-Haul                                                                           | Commercial                                                                          |
|-------|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|       |                                                                           |  |  |  |  |
| Start | Program                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| 2010  | Recyclable or Compostable Container Food Program (actual 2011)            |                                                                                   |                                                                                    |                                                                                     | ✓                                                                                   |
| 2012  | Multi-Family Universal Organics Service*                                  |                                                                                   | ✓                                                                                  |                                                                                     |                                                                                     |
|       | Increase Enforcement Residential Bans                                     | ✓                                                                                 | ✓                                                                                  |                                                                                     |                                                                                     |
|       | Carpet Take-Back                                                          |                                                                                   |                                                                                    | ✓                                                                                   | ✓                                                                                   |
|       | Increase Enforcement Commercial Paper Ban                                 |                                                                                   |                                                                                    |                                                                                     | ✓                                                                                   |
|       | Junk Mail, Yellow Pages Opt-Out*                                          | ✓                                                                                 | ✓                                                                                  |                                                                                     |                                                                                     |
| 2013  | Ban of Asphalt Paving, Concrete, Bricks*                                  |                                                                                   |                                                                                    | ✓                                                                                   | ✓                                                                                   |
|       | Floor Sorting of C&D Loads (>50%)                                         |                                                                                   |                                                                                    | ✓                                                                                   |                                                                                     |
|       | Enhanced Commercial Organics Outreach                                     |                                                                                   |                                                                                    |                                                                                     | ✓                                                                                   |
|       | New Education - Small Business Free Recycle Carts, Audit Top Self-Haulers |                                                                                   |                                                                                    | ✓                                                                                   | ✓                                                                                   |
|       | Restore Education to All Sectors                                          | ✓                                                                                 | ✓                                                                                  | ✓                                                                                   | ✓                                                                                   |
| 2014  | Single-Family Organics Ban                                                | ✓                                                                                 |                                                                                    |                                                                                     |                                                                                     |
|       | Reusable Bag Campaign*                                                    | ✓                                                                                 | ✓                                                                                  |                                                                                     |                                                                                     |
|       | Asphalt Roofing Shingles Ban                                              |                                                                                   |                                                                                    | ✓                                                                                   |                                                                                     |
|       | Extend Commercial Ban to Additional Material                              |                                                                                   |                                                                                    |                                                                                     | ✓                                                                                   |
|       | Clean Wood Ban                                                            |                                                                                   |                                                                                    | ✓                                                                                   | ✓                                                                                   |
|       | Plastic Film Ban                                                          |                                                                                   |                                                                                    | ✓                                                                                   | ✓                                                                                   |
| 2015  | Multi-family Organic Waste Ban                                            |                                                                                   | ✓                                                                                  |                                                                                     |                                                                                     |
|       | Plastic Bag Ban (from stores)*                                            | ✓                                                                                 | ✓                                                                                  |                                                                                     |                                                                                     |
|       | Paint Product Stewardship Solution                                        | ✓                                                                                 | ✓                                                                                  | ✓                                                                                   | ✓                                                                                   |
|       | Divert Reusables From Self-Haul                                           |                                                                                   |                                                                                    | ✓                                                                                   |                                                                                     |
| 2016  | Market Development for Textiles                                           | ✓                                                                                 | ✓                                                                                  |                                                                                     |                                                                                     |
|       | Commercial Organics Ban                                                   |                                                                                   |                                                                                    |                                                                                     | ✓                                                                                   |
|       | Pre-scale Recycling                                                       |                                                                                   |                                                                                    | ✓                                                                                   |                                                                                     |
| 2017  | C&D in Commercial Ban                                                     |                                                                                   |                                                                                    |                                                                                     | ✓                                                                                   |
| 2020  | Pet Waste & Diapers Composting                                            | ✓                                                                                 | ✓                                                                                  |                                                                                     |                                                                                     |

✓ Projected implementation

\* Actual earlier start year:

Multi-family Universal Organics Service 4Q2011

Junk Mail, Yellow Pages Opt-out 2011

Asphalt, bricks, concrete paving ban legislation already passed, effective 2012

Reusable Bag Campaign 2012

Plastic Bag Ban 2012

## Transfer Facilities

Transfer stations compile collected garbage and other materials into larger loads for hauling to their next stop. SPU's transfer stations have outlived their useful lives. We are looking forward to finishing the projects to rebuild them.

The city owns and operates two transfer facilities. The North Recycling and Disposal Station (NRDS) is in the Wallingford neighborhood. The South Recycling and Disposal Station (SRDS) is next to the South Park neighborhood. The two stations receive collector trucks and material self-hauled by businesses and residents. Two private transfer stations supplement the capacity of the city stations.

SPU also runs two moderate risk waste (MRW) collection facilities. Seattle provides this service on behalf of the Local Hazardous Waste Management Program (LHWMP). The MRW facility at SRDS serves the city's south end. The other serves the north end at a location near Aurora Avenue and 125th NE.

SPU does not expect to see self-haul recycling rate increases until the city's two transfer stations are rebuilt. We expect to complete the first phase of the south rebuild in 2012. The north facility is scheduled to open in 2014. SPU postponed planning for the former SRDS. However, goals for the property include a separate recycling drop-off area, a reuse area, and a new drop-off facility for moderate risk waste.

Meanwhile, smaller projects keep the existing stations safe and reliable.

**Transfer facility recycling** recommendations, as seen in the recycling recommendations shown in the preceding chart, include strategies for self-haul that focus on:

- Banning certain materials from disposal in the garbage
- Making reuse and recycling drop-off more convenient
- Educating self-haulers about recycling opportunities

Other transfer facility recommendations keep current stations running as well as possible, and plan for running and taking advantage of the rebuilt city stations.

## Processing and Disposal

Processing and disposal are the end stages of managing the materials in Seattle's MSW system. Seattle contracts with different companies for recycling processing, organics composting, and landfill disposal. This Plan proposes to stay with the contracting approach to end-stage MSW management. Processing and disposal innovations would come through the contracts with private service providers.

**Recycling Processing.** Rabanco, Ltd, currently holds the contract for recycling processing at their Rabanco Recycling Center and Transfer Station. It is through negotiating the contract that Seattle defines (or "designates") what materials can be collected for recycling. Rabanco facility improvements now allow more types of materials, such as specific plastics, in addition to traditionally recycled materials like paper, bottles, and cans. The last time Seattle added materials to the recyclables list was in 2009, when the new collection contracts started. All recycling collected from the city's residential sector goes to the Rabanco facility.

Recycling from the commercial sector can go to the Rabanco facility. Or if private sector haulers collect it, recycling can go to open market recyclers and traders. Seattle requires private sector recyclers to turn in reports once a year. The reports provide SPU with data on what materials recyclers have handled and in what amounts.

**Recycling processing** recommendations center on contracting, and propose:

- Continuing with contracting out city collected recycling processing
- Continuing to allow open-market processing services for material privately collected from commercial sector
- Evaluating the best contracting approach to prepare for 2013 to 2019 contract end

**Organics Processing.** Organics processing (composting) now includes yard waste, all food waste, compostable (food-soiled) paper, and other compostable food packaging. The city has had a contract for processing yard trimmings at Cedar Grove since the facility opened in 1989. Seattle's organics go to the Cedar Grove Maple Valley facility, and organics from north Seattle go to their facility near Everett. As regional demand for composting increases, Cedar Grove and others are developing options to increase capacity.



**Organics processing** recommendations center on contracting, increasing capacity, and compostable materials, including:

- Continuing with contracting out city-collected organics processing
- Continuing to allow open-market processing services for commercial sector organics
- Supporting composting capacity development—including possible anaerobic digestion. Pursuing competitive contract process after current contract ends
- Continuing to encourage backyard organics composting
- Supporting changes to food packaging and labeling in ways that promote composting and reduce contamination, and enhance contamination outreach and enforcement

## Executive Summary

**Landfill Disposal.** The city manages landfill disposal through its contract with Waste Management of Washington (Waste Management) for rail haul and disposal of all non-recyclable waste (garbage). The waste goes to their Columbia Ridge Landfill in Gilliam County, Oregon. This contractual arrangement has been in place since 1990. The current contract expires in 2028.

Projections for Columbia Ridge and other regional landfills indicate ample capacity for decades. Any significant changes to processing and disposal would be built into contracts for those services.



**Landfill disposal** recommendations center on the contracting approach:

- Continue with contracting for landfill disposal
- Do not pursue or authorize direct combustion of mixed MSW. Do not authorize such facilities
- Monitor and consider emerging conversion technologies
- Evaluate contracting approach and disposal alternatives as 2028 nears

## Emergency Management

Seattle's geography and built environment put it at risk for catastrophic events such as earthquakes, pandemics, and terrorism. Two specific emergency response plans apply to the city's solid waste system.

**Disaster Debris Management Plan.** The city's Disaster Debris Management Plan sets guidelines for removing and processing debris after a disaster that creates large volumes of waste.

**Continuity of Operations Plan.** SPU's Continuity of Operations Plan (COOP) describes how critical functions, including solid waste, will be maintained in case of a serious emergency. It also sets timeframes for restoring solid waste services. SPU will finish drafting the COOP in 2015.



## Other Wastes

In addition to the municipal solid waste (MSW) system, Seattle manages other programs for wastes outside the MSW system. For the first time, Seattle's Plan includes program proposals for construction and demolition (C&D) debris. The historic landfills, Clean City, and special waste programs continue their vital services and do not propose major changes. Moderate risk waste management will continue to operate under the Local Hazardous Waste Management Program.

### Construction and Demolition (C&D) Debris

The largest waste stream outside the MSW system is C&D. The city's prior solid waste plans included neither specific goals nor objectives for C&D. Work over the past few years now positions SPU to propose C&D programs and the first-ever C&D recycling goal.

SPU currently contracts with Waste Management for C&D collection. C&D generators may use this service or they may self-haul. C&D goes to a mix of private and public transfer and processing facilities both inside and outside of Seattle. C&D waste generation is considerably more variable compared with MSW because it is highly sensitive to economic upswings and downturns.

In the years since the 2004 Amendment, SPU conducted studies and developed ways to measure C&D. At this point, we can now propose programs and set goals for this waste stream. The *Zero Waste* Resolution directed these and other actions.

Planning for C&D overlaps somewhat with MSW. This is because some debris from construction and demolition enters the MSW system, mostly at the city's transfer stations from self-haulers. This Plan's MSW recycling recommendations address this small portion of material that enters the MSW stream. In addition, sustainable building programs encourage waste prevention in both the C&D and MSW sectors.

SPU worked with industry stakeholders to develop C&D recycling options for this Plan update. Our analysis showed that current programs would maintain the current C&D recycling rate, which was 61.4% in 2010. If all recommendations are implemented, Seattle's C&D recycling rate should reach 70% by 2020.



**C&D** recommendations set goals, target certain materials, set facility standards, and modify permit requirements, including:

- Creating citywide C&D recycling goal of 70% by 2020
- Developing, with private processors, an advanced level facility certification process
- Banning metal, cardboard, plastic film wrap, carpet, and scrap gypsum (new construction) by 2013. Banning clean wood and tear-off asphalt shingles by 2014
- Requiring recycling reports from contractors as a term of their final permit
- Continuing and building on existing programs for LEED and Built Green, salvage, hybrid deconstruction, and coordinating with waste prevention activities

The materials bans will be phased in. All bans will begin with a period of education.

## Historic Landfills

The historic landfills program tends to the old in-city and city-owned landfills that took Seattle's garbage before 1987. Until the 1960s, Seattle disposed of its garbage in landfills within the city limits. Between 1966 and 1986, the City of Seattle operated two major landfills south of Seattle: Midway Landfill and Kent Highlands Landfill.

No major new initiatives are being considered for Seattle's historic landfills. Instead, it's more a matter of staying the course on the decisions and investments that we have already made.

**Historic Landfills** for the planning period will be managed to:

- Continue to monitor and maintain Kent Highlands and Midway in accordance with regulatory requirements and to the satisfaction of adjacent communities
- Reduce monitoring requirements as appropriate, with regulatory concurrence
- Continue to monitor and control landfill gas at Interbay and Genessee sites
- Respond to problems at historic in-city landfills on a case-by-case basis
- Pursue possible site de-listing and future beneficial use of the Kent Highlands and Midway landfill sites

## Clean City Programs

Clean City programs are an extension of traditional City of Seattle solid waste services that help keep streets and neighborhoods clean and healthy. Clean City programs abate graffiti, illegal dumping, and litter. The city funds Clean City separately from solid waste programs.

**Anti-Graffiti Program.** The anti-graffiti program removes or paints out graffiti on public property. SPU, other city departments, other agencies, and the public are all vital for making this program successful.

SPU runs a reporting hotline, abates graffiti on certain structures, performs enforcement, and engages the public's support. Anti-graffiti recommendations will make program operations more effective and respond to evolving needs.



**Anti-graffiti** recommendations include plans to:

- Implement the 2009 to 2010 private property task force's recommendations
- Encourage reporting, translation of outreach materials, and development of strategic partnerships to leverage resources
- Amend the Seattle Municipal Code (SMC 12.A-08-020) to include stickers in the list of prohibited materials
- Redeploy abatement resources across city departments to better address graffiti abatement on parking pay stations
- Enhance community involvement and public education. Develop a customer satisfaction measurement tool
- In the long-term, increase program emphasis on prevention, apprehension and prosecution, and interdepartmental and inter-agency collaboration

**Illegal Dumping Program.** The illegal dumping program addresses illegally dumped materials on public property. SPU program staff inspect the dumping sites. Washington State Department of Corrections crews clean up the materials as needed. Illegal dumping recommendations will improve abatement.

**Illegal dumping** recommendations include plans to:

- Improve enforcement protocol
- Provide additional staff training
- Expand use of existing database

**Litter Programs.** SPU provides several programs designed to reduce litter. **Adopt-a-Street** offers tools for volunteers to collect litter. **Street Side Litter** places collection cans along city streets in business areas. **Public Place Recycling** pairs recycling with litter cans. **Litter Collection in Parks** places collection cans in city parks. Washington State’s secured load requirement reduces litter and road debris.

**Litter program** recommendations include a key item to address Metro bus zones. Many bus shelters are shifting to canopies attached to privately-owned buildings. Clear roles, responsibilities, and design standards will ensure these shelters receive proper litter services.

## Moderate Risk Waste

The Local Hazardous Waste Management Program (LHWMP) manages moderate risk waste in Seattle and other areas of King County. Moderate risk waste (MRW) is hazardous waste generated by residents and in small quantities by businesses and institutions. This includes two categories of waste:

1. *Household hazardous waste (HHW)*, which is generated by residents, and
2. *Conditionally exempt small quantity generator waste (CESQG)*, which is generated in small quantities by businesses, schools, and other institutions.

Four local government bodies jointly manage the LHWMP: SPU, King County, Public Health - Seattle & King County, and the county's suburban cities. To address changes that have occurred within King County, the LHWMP has committed to:

- Providing the maximum possible number of service hours at Seattle's MRW collection facilities
- Collecting CESQG on an on-going basis
- Expanding outreach for hazardous materials collection services, and providing outreach to the elderly, homebound, non-English speaking population, and historically underserved communities
- Working to secure state product stewardship legislation for unwanted medicines, mercury-containing lighting, and paint

## Special Wastes

Like moderate risk waste, special wastes can't go into the regular municipal solid waste (MSW) system. But they aren't hazardous enough to qualify as "dangerous" as defined by state and federal law. These wastes require special handling and disposal because of regulatory requirements or other reasons. Toxicity, volumes, or particular handling issues are some of those reasons. In some cases, special wastes can be landfilled if properly managed. In order to ensure proper management, SPU will:

- Continue to maintain up-to-date referral information for special wastes
- Continue programs to create better end-of-life solutions for problem materials, such as state-level product stewardship laws for fluorescent lighting and consumer electronics

## Administration and Financing

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SPU fully expects to maintain the ability to carry out the Plan: SPU’s organization and financial health are stable. Carrying out the plan will also require robust education efforts. Since monthly solid waste rates will rise with or without the new programs, education will be vital. Customers will need to know how to work with the new programs to keep their personal costs as low as possible.

### Organization and Mission of Seattle Public Utilities

Solid waste functions are spread throughout SPU. As a department within the City of Seattle, SPU houses three direct-service utilities. They are the Water, Drainage and Wastewater, and Solid Waste utilities. Our organizational structure consists of seven branches. The Utility Systems Management branch is the main planning arm for SPU. The other branches either implement solid waste programs or provide indirect support such as finance and human resources. SPU strives to deliver reliable, efficient, and environmentally responsible services.

### Education

SPU places a high priority on educating customers about recycling and waste reduction. Educating our customers about the impacts of their behavior—and highlighting the programs available to them—has helped develop the city’s identity as one of the greenest in the nation.

SPU’s many solid waste education efforts are built into customer service and overall communications. We use newsletters and calendars, the web, our inspection team, transfer station staff, and other means to inform customers. Commercial customers receive billing and service information through their private collection services. The Resource Venture and SPU’s key accounts team also help educate commercial customers.



SPU’s educational programs have been highly effective. The Washington State Recycling Association recognized the City of Seattle with a Recycler of the Year Award for the Better Recycling Starts March 30 Campaign. This campaign eased the 2009 transition to new collection contracts. Recycling recommendations in this Plan include plans to enhance education.

### Financing

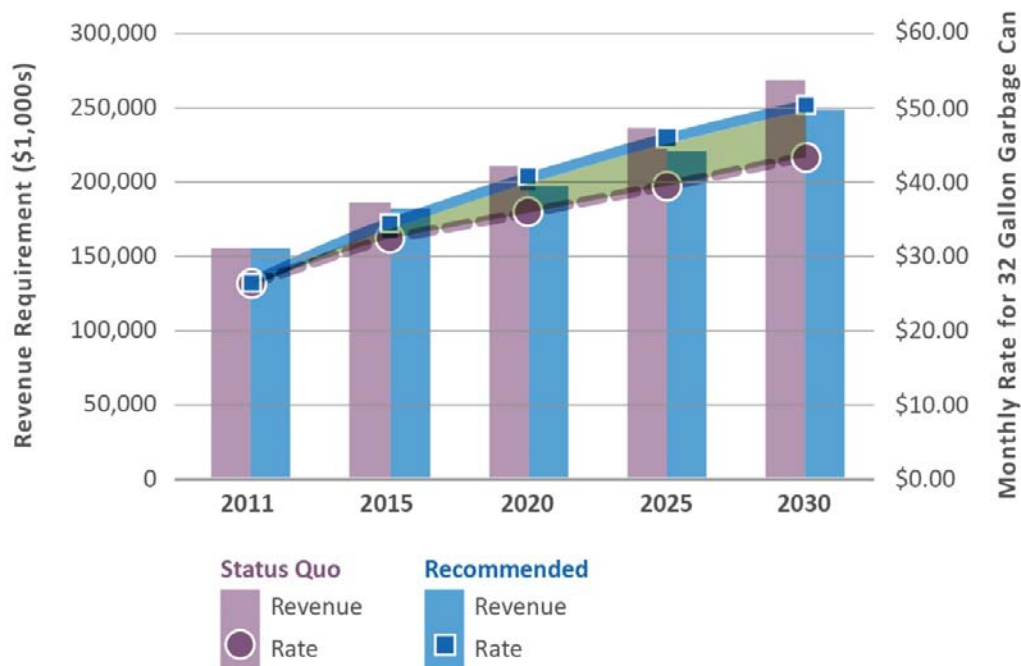
SPU’s financial analysis on the package of recommendations in this Plan revealed three important effects.

## Executive Summary

First, overall system costs will be less with the recommendations in this Plan than they would be by continuing the current programs (status quo). Thus, the revenue needed to operate the solid waste program will be less than if we did not change the status quo.

With the recommended programs, revenue needed in 2030 drops from about 270 million to 249 million. Solid waste system costs decrease because the recommended programs reduce garbage tons moving through the system. And waste reduction and recycling cost less than putting garbage in the landfill. Although the new programs have implementation costs, savings from reducing garbage more than offset the costs of the new programs.

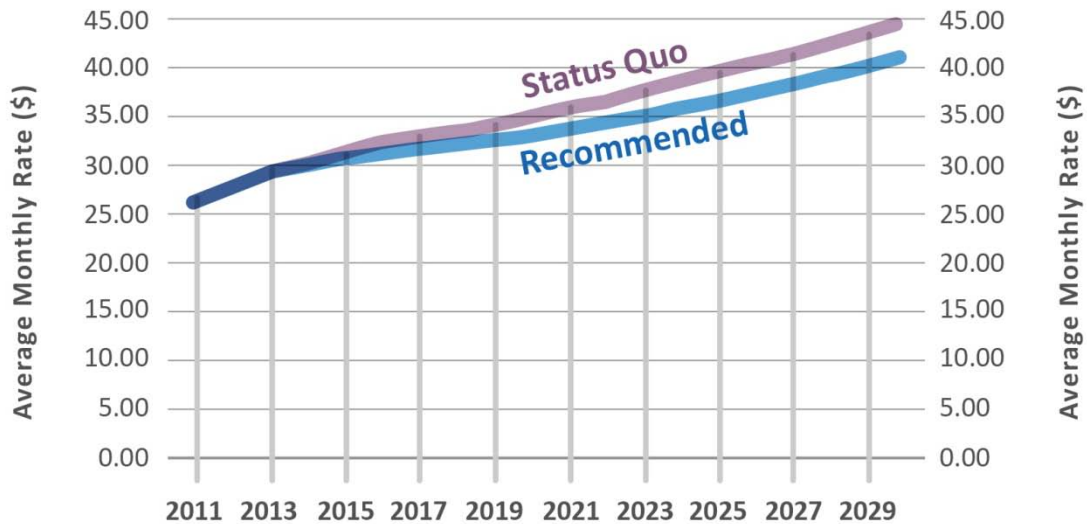
### Revenue Needs will Rise More Slowly and Monthly Rates will Rise More Steeply with Recommended Programs



Secondly, the monthly rate (fee) per can will rise higher than if SPU does not change programs as shown by the green shaded area in the chart above. For example, by the year 2030 with the recommended programs the monthly can rate will be about \$50 as compared with \$44 under the status quo. As customers decrease their amount of garbage, they reduce the size, number or frequency of containers they need. In turn, this reduces the number of service units from which SPU can collect rates. Thus, the rate per unit rises. Under the status quo, rates will rise to cover inflation and any new capital investments.

The third effect is the most important to the customer. Most customers will pay less for their monthly service than if SPU does not change programs, even though the per-can rate will rise. Customers tend to switch to a smaller garbage can size and less frequent pick-up as they reduce waste and recycle more. The following figure illustrates this effect. In the year 2030, average customer monthly payments will be almost \$8 a month lower than if programs didn't change. However, rates will be sensitive to actual customer demand.

## Average Customer Costs will Rise More Slowly



System costs are comprised of operations and maintenance (O&M) and capital costs. About 60% of annual O&M costs come from SPU contracts for collection, processing, and disposal. The remainder comes from running the city's two transfer stations and other SPU solid waste functions. Annual ratepayer revenue pays for most O&M costs. This revenue comes from monthly rates, or fees, that our customers pay for their collection service.

Solid waste financing also needs to cover capital investments. SPU will rely heavily on borrowing over the next few years. We are in a period of large capital improvements. Projects are underway to upgrade both of the city's recycling and disposal stations. SPU is also a party to the cleanup of the old landfill in the South Park Development project. To finance capital spending, SPU relies primarily on borrowing and to a lesser extent on rate revenues.

All SPU's spending and rate decisions go through an exacting decision process and comply with well-developed financial policies. The Mayor and City Council approve all program and financial decisions.

For in-depth information on any topic in the Executive Summary, refer to the relevant chapter in the Plan. A summary of the recommendations from this Plan begins on the next page.

## Executive Summary



## Seattle Solid Waste Management Plan Recommendations Summary

These are summaries of the recommendations from City of Seattle’s 2011 Solid Waste Plan. They are organized by strategy and then by program. The reference number is for feedback to SPU.

*\*Indicates where to find additional information about the recommendations in the Plan*

| Strategy  | Program | Ref No | Recommendation                                                                                                                                                               | 2011 Plan Section*                                                                |
|-----------|---------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Recycling | MSW     | R1     | Continue to operate current programs as a base for future new recycling programs                                                                                             | MSW Recycling Recommendations 4.3<br>Collection 4.2*<br>Transfer 4.4*             |
|           | MSW     | R2     | Continue to require quick-serve restaurants, food courts and institutional food services to use recyclable or compostable single-use food service products                   | MSW Recycling Recommendations 4.3                                                 |
|           | MSW     | R3     | Implement universal multi-family organics service in 2012 (Actual start Sep 2011)                                                                                            | MSW Recycling Recommendations 4.3<br>Collection 4.2*                              |
|           | MSW     | R4     | Increase enforcement of residential bans in 2012                                                                                                                             | MSW Recycling Recommendations 4.3<br>Collection 4.2*                              |
|           | MSW     | R5     | Implement carpet take-back program in 2012                                                                                                                                   | MSW Recycling Recommendations 4.3<br>Waste Prevention 3.0*                        |
|           | MSW     | R6     | Increase enforcement of commercial paper ban in 2012                                                                                                                         | MSW Recycling Recommendations 4.3<br>Collection 4.2*                              |
|           | MSW     | R7     | Implement junk mail and yellow pages phone books opt-out (Implementation accelerated to 2011)                                                                                | MSW Recycling Recommendations 4.3<br>Waste Prevention 3.4*                        |
|           | MSW     | R8     | Implement ban on landfill disposal of asphalt paving, concrete and bricks in 2013 at city transfer stations and in commercial garbage containers. (Legislation adopted 2011) | MSW Recycling Recommendations 4.3<br>Collection 4.2*<br>Transfer 4.3*             |
|           | MSW     | R9     | Implement transfer station floor sorting program for C&D loads that appear at least 50% C&D material in 2013                                                                 | MSW Recycling Recommendations 4.3<br>Transfer 4.3*                                |
|           | MSW     | R10    | Enhance commercial organics outreach in 2013                                                                                                                                 | MSW Recycling Recommendations 4.3<br>Collection 4.2*                              |
|           | MSW     | R11    | Launch new education programs in 2013 to small business about free recycle carts and audits of top self-haulers.                                                             | MSW Recycling Recommendations 4.3<br>Collection 4.2*<br>Transfer 4.3*             |
|           | MSW     | R12    | Restore education funding for all sectors to pre-recession levels in 2013                                                                                                    | MSW Recycling Recommendations 4.3<br>Collection 4.2*<br>Transfer 4.4*             |
|           | MSW     | R13    | Add food waste and compostable paper to single-family organics disposal ban in 2014                                                                                          | MSW Recycling Recommendations 4.3<br>Collection 4.2*                              |
|           | MSW     | R14    | Launch a reusable bag campaign in 2014 (Implementation accelerated to 2012)                                                                                                  | MSW Recycling Recommendations 4.3<br>Waste Prevention 3.0*                        |
|           | MSW     | R15    | Implement asphalt roofing shingles landfill disposal ban 2014 at city transfer stations                                                                                      | MSW Recycling Recommendations 4.3<br>Transfer 4.4*<br>C&D 5.1*                    |
|           | MSW     | R16    | Extend commercial landfill disposal ban to include additional materials 2014                                                                                                 | MSW Recycling Recommendations 4.3<br>Collection 4.2*                              |
|           | MSW     | R17    | Implement clean wood landfill disposal ban 2014 at city transfer stations and in commercial garbage containers                                                               | MSW Recycling Recommendations 4.3<br>Collection 4.2*<br>Transfer 4.4*<br>C&D 5.1* |

## Recommendations Summary

| Strategy  | Program | Ref No                                                                                                                                                                                                     | Recommendation                                                                                                     | 2011 Plan Section*                                                          |
|-----------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| Recycling | MSW     | R18                                                                                                                                                                                                        | Implement a plastic film landfill disposal ban 2014 at city transfer stations and in commercial garbage containers | MSW Recycling Recommendations 4.3<br>Collection 4.2*<br>C&D 5.1*            |
|           | MSW     | R19                                                                                                                                                                                                        | Implement multi-family organics (food and compostable paper) landfill disposal ban 2015                            | MSW Recycling Recommendations 4.3<br>Collection 4.2*                        |
|           | MSW     | R20                                                                                                                                                                                                        | Implement a plastic bag ban (from stores) in 2015 (accelerated to 2012)                                            | MSW Recycling Recommendations 4.3<br>Collection 4.2*                        |
|           | MSW     | R21                                                                                                                                                                                                        | Implement a product stewardship program for architectural paint in 2015                                            | MSW Recycling Recommendations 4.3<br>Waste Prevention 3.0*                  |
|           | MSW     | R22                                                                                                                                                                                                        | Enhance diversion of reusables from self-haul loads in 2015                                                        | MSW Recycling Recommendations 4.3<br>Transfer 4.4*<br>Waste Prevention 3.4* |
|           | MSW     | R23                                                                                                                                                                                                        | Launch market development for textiles in 2016                                                                     | MSW Recycling Recommendations 4.3<br>Waste Prevention 3.0*                  |
|           | MSW     | R24                                                                                                                                                                                                        | Implement commercial organics (food and compostable paper) landfill disposal ban in 2016                           | MSW Recycling Recommendations 4.3                                           |
|           | MSW     | R25                                                                                                                                                                                                        | Implement pre-scale recycling at the rebuilt transfer stations in 2016                                             | MSW Recycling Recommendations 4.3<br>Transfer 4.4*                          |
|           | MSW     | R26                                                                                                                                                                                                        | Implement a commercial landfill disposal ban on C&D materials 2017 in commercial garbage containers                | MSW Recycling Recommendations 4.3<br>Collection 4.2*<br>CC&D 5.1*           |
|           | MSW     | R27                                                                                                                                                                                                        | Implement pet waste and diaper composting program in 2020                                                          | MSW Recycling Recommendations 4.3<br>Collection 4.2*                        |
|           | MSW     | R28                                                                                                                                                                                                        | Revise city's recycling goals to 60% by 2015 and 70% by 2022                                                       | MSW Recycling Recommendations 4.3                                           |
|           | MSW     | R29                                                                                                                                                                                                        | Consider changing single-family garbage collection to every other week after evaluating 2012 pilot project         | Collection 4.2<br>MSW Recycling 4.3*                                        |
|           | C&D     | CD1                                                                                                                                                                                                        | Set the C&D recycling rate goal to 70% by 2020                                                                     | C&D 5.1                                                                     |
| C&D       | CD2     | Continue current programs linked to Waste Prevention: LEED and Built Green, voluntary salvation assessment promotion, change definitions for waste diversion credits                                       | C&D 5.1<br>Waste Prevention 3.0*                                                                                   |                                                                             |
| C&D       | CD3     | Develop training programs for hybrid deconstruction techniques for residential and small commercial structures                                                                                             | C&D 5.1<br>Waste Prevention 3.0*                                                                                   |                                                                             |
| C&D       | CD4     | Develop and widely promote a certification program for C&D processing facilities in coordination with the local industry and other solid waste planning jurisdictions                                      | C&D 5.1                                                                                                            |                                                                             |
| C&D       | CD5     | Implement a disposal ban for asphalt, bricks and concrete paving 2012 at construction jobsites and private transfer stations                                                                               | C&D 5.1<br>MSW Recycling Recommendations 4.3*                                                                      |                                                                             |
| C&D       | CD6     | Implement landfill disposal bans for certain materials by 2013 at construction jobsites and private transfer stations: metal, and cardboard, plastic film wrap, carpet, scrap gypsum from new construction | C&D 5.1                                                                                                            |                                                                             |
| C&D       | CD7     | Implement landfill disposal ban for certain materials in 2014 at construction jobsites and private transfer stations: clean wood, tear-off asphalt shingles                                                | C&D R5.1<br>MSW Recycling Recommendations 4.3*                                                                     |                                                                             |

| Strategy            | Program                 | Ref No | Recommendation                                                                                                                                   | 2011 Plan Section*                                          |
|---------------------|-------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| System & Facilities | Collection              | C1     | Continue the current practice of contracting for collection services to encourage competition and achieve best prices for SPU ratepayers         | Collection 4.2                                              |
|                     | Collection              | C2     | Continue monitoring contractor performance to ensure contractors meet obligations and customers receive promised service                         | Collection 4.2                                              |
|                     | Transfer Facilities     | TF1    | Continue to maintain all structures, systems and equipment to keep existing transfer stations safe and functional as long as they are being used | Transfer 4.4                                                |
|                     | Transfer Facilities     | TF2    | Ensure interim major equipment purchases compatible with new transfer facilities                                                                 | Transfer 4.4                                                |
|                     | Transfer Facilities     | TF3    | Seek opportunities to make services equitable for all Seattle populations, particularly the historically under-served                            | Transfer 4.4                                                |
|                     | Transfer Facilities     | TF4    | Continue trip reduction strategies                                                                                                               | Transfer 4.4                                                |
|                     | Transfer Facilities     | TF5    | Implement Alaskan Way Viaduct Contingency Plan for managing materials from city's north transfer facility during viaduct closure                 | Transfer 4.4                                                |
|                     | Transfer Facilities     | TF6    | Rebuild the north and south transfer stations                                                                                                    | Transfer 4.4                                                |
|                     | Transfer Facilities     | TF7    | Continue planning for staffing and equipment transition to new transfer facilities                                                               | Transfer 4.4                                                |
|                     | Transfer Facilities     | TF8    | Renew redevelopment planning of existing SRDS when resources are available and decisions on the north site are made                              | Transfer 4.4                                                |
|                     | Processing and Disposal | PD1    | Continue to contract for processing of recyclable materials collected by SPU contracts                                                           | Recycling Processing 4.5                                    |
|                     | Processing and Disposal | PD2    | Continue to allow open market processing for recyclable materials privately collected from the commercial sector                                 | Recycling Processing 4.5                                    |
|                     | Processing and Disposal | PD3    | Evaluate optimal contracting approach in anticipation of 2013/2016/2019 contract end dates                                                       | Recycling Processing 4.5                                    |
|                     | Processing and Disposal | PD4    | If recycling gains lag, consider testing "dirty" materials recycling facility (MRF)                                                              | Recycling Processing 4.5                                    |
|                     | Processing and Disposal | PD5    | Continue to contract for processing of organic materials collected by SPU contracts                                                              | Yard and Food Waste Composting 4.5                          |
|                     | Processing and Disposal | PD6    | Continue to allow open market processing services for organic materials collected from the commercial sector                                     | Yard and Food Waste Composting 4.5                          |
|                     | Processing and Disposal | PD7    | Support composting capacity development. Pursue competitive process after current contract end dates 2013/2014/2015                              | Yard and Food Waste Composting 4.5                          |
|                     | Processing and Disposal | PD8    | Support changes to food packaging and labeling in ways that promote composting and reduce contamination                                          | Yard and Food Waste Composting 4.5<br>Waste Prevention 3.0* |
|                     | Processing and Disposal | PD9    | Continue to contract for landfill disposal                                                                                                       | Disposal 4.5                                                |

## Recommendations Summary

| Strategy            | Program                 | Ref No | Recommendation                                                                                                                                                               | 2011 Plan Section*      |
|---------------------|-------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| System & Facilities | Processing and Disposal | PD10   | Do not pursue or authorize direct combustion of mixed solid waste. Do not authorize such facilities                                                                          | Disposal 4.5            |
|                     | Processing and Disposal | PD11   | Monitor and consider emerging technologies                                                                                                                                   | Disposal 4.5            |
|                     | Processing and Disposal | PD12   | Evaluate contracting approach and disposal alternatives as the long-term disposal contract comes to an end in 2028                                                           | Disposal 4.5            |
|                     | Historic Landfills      | HL1    | Continue to monitor and maintain Kent Highlands and Midway in accordance with regulatory requirements and to the satisfaction of adjacent communities                        | Historic Landfills 5.2  |
|                     | Historic Landfills      | HL2    | Reduce monitoring requirements as appropriate, with regulatory concurrence                                                                                                   | Historic Landfills 5.2  |
|                     | Historic Landfills      | HL3    | Continue to monitor and control landfill gas at Interbay and Genessee                                                                                                        | Historic Landfills 5.2  |
|                     | Historic Landfills      | HL4    | Respond to problems at historic in-city landfills on a case-by-case basis                                                                                                    | Historic Landfills 5.2  |
|                     | Historic Landfills      | HL5    | Pursue possible site de-listing and future beneficial use of the Kent Highlands and Midway landfill sites                                                                    | Historic Landfills 5.2  |
| Clean City          | Graffiti                | CC1    | Implement the 2009 – 2010 private property anti-graffiti task force's recommendations                                                                                        | Anti-Graffiti 5.3       |
|                     | Graffiti                | CC2    | Anti-graffiti: amend the Seattle Municipal Code (SMC 12.A.08.020) to include stickers in the list of prohibited materials                                                    | Anti-Graffiti 5.3       |
|                     | Graffiti                | CC3    | Redeploy abatement resources across City departments to better address graffiti abatement on multi-space parking pay stations                                                | Anti-Graffiti 5.3       |
|                     | Graffiti                | CC4    | Enhance community involvement and public education activities: develop community outreach and engagement plan; convene anti-graffiti outreach coalition                      | Anti-Graffiti 5.3       |
|                     | Graffiti                | CC5    | Develop and launch a tool to determine customer satisfaction with SPU's anti-graffiti services                                                                               | Anti-Graffiti 5.3       |
|                     | Graffiti                | CC6    | Long-term, increase emphasis on prevention, apprehension and prosecution and interdepartmental/interagency collaboration                                                     | Anti-Graffiti 5.3       |
|                     | Illegal Dumping         | CC7    | Further develop enforcement protocol and enhance staff training for safe and effective enforcement                                                                           | Illegal Dumping 5.3     |
|                     | Illegal Dumping         | CC8    | Long-term, increase emphasis on enforcement                                                                                                                                  | Illegal Dumping 5.3     |
|                     | Litter                  | CC9    | Develop formalized roles, responsibilities and design standards for bus zone transition projects                                                                             | Litter 5.3              |
| Moderate Risk Waste | Moderate Risk Waste     | MRW1   | Maximize service hours at Seattle's collection facilities as much as possible                                                                                                | Moderate Risk Waste 5.4 |
|                     | Moderate Risk Waste     | MRW2   | Continue collecting CESQG collection                                                                                                                                         | Moderate Risk Waste 5.4 |
|                     | Moderate Risk Waste     | MRW3   | Expand outreach for hazardous materials collection services, target outreach to elderly, homebound, non-English speaking population and historically underserved communities | Moderate Risk Waste 5.4 |

| Strategy         | Program              | Ref No | Recommendation                                                                                                                                                                                                                                                                                                                                                                    | 2011 Plan Section*                                           |
|------------------|----------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| MRW              | Moderate Risk Waste  | MRW4   | Work to secure state product stewardship legislation for unwanted medicines, mercury-containing lighting and paint                                                                                                                                                                                                                                                                | Moderate Risk Waste 5.4<br>Waste Prevention 3.4*             |
| Special Wastes   | Special Wastes       | SW1    | Continue to maintain up-to-date referral information for special wastes                                                                                                                                                                                                                                                                                                           | Special Wastes 5.6                                           |
| Waste Prevention | Reuse                | WP1    | Continue existing transfer station reuse programs until new facilities done: contractor diversion, charity drop boxes. Reprogram as needed for new facilities                                                                                                                                                                                                                     | Waste Prevention 3.4<br>Transfer Facilities 4.4*             |
|                  | Reuse                | WP2    | Develop educational materials to direct contractors to source-separated drop-off services or C&D mixed load processors in lieu of SPU's transfer stations                                                                                                                                                                                                                         | Waste Prevention 3.4<br>Transfer Facilities 4.4*<br>C&D 5.1* |
|                  | Reuse                | WP3    | Collaborate with charities and others to continue to find ways to divert usable items and materials                                                                                                                                                                                                                                                                               | Waste Prevention 3.4                                         |
|                  | Reuse                | WP4    | Continue to support city policies requiring donation of usable electronic equipment to schools                                                                                                                                                                                                                                                                                    | Waste Prevention 3.4                                         |
|                  | Reuse                | WP5    | Promote private donation of electronic products to organizations that refurbish them                                                                                                                                                                                                                                                                                              | Waste Prevention 3.4                                         |
|                  | Reuse                | WP6    | Continue involvement and support for industrial commodity exchange programs, focusing on market development for recycled commodities as needed                                                                                                                                                                                                                                    | Waste Prevention 3.4                                         |
|                  | Reuse                | WP7    | Work with the NWPC to expand Washington State's Electronic Product Recycling Law to include additional types of electronic products                                                                                                                                                                                                                                               | Waste Prevention 3.4                                         |
|                  | Reuse                | WP8    | Continue to ensure electronics disposal meets or exceeds Basel Action Network (BAN) Electronic Recycler's Pledge of True Stewardship, Ecology's Environmentally Sound Management and performance Standards for Direct Processors, and upgraded BAN e-Stewards standards as may be adopted by the Seattle City Council                                                             | Waste Prevention 3.4                                         |
|                  | Reuse                | WP9    | When renewing in 2014, upgrade electronics disposal standards in Seattle's surplus electronics contract to the new BAN e-Stewards standards                                                                                                                                                                                                                                       | Waste Prevention 3.4                                         |
|                  | Sustainable Building | WP10   | Continue support for current C&D prevention and recycling programs: changes in City of Seattle building codes that provide incentives for salvage and deconstruction; U.S. Green Building Council (LEED); collaboration with Department of Planning and Development                                                                                                               | Waste Prevention 3.4<br>C&D 5.1*                             |
|                  | Sustainable Building | WP11   | Support new and expanded C&D prevention and recycling initiatives: grading standards for salvaged structural (dimension) lumber to expand the market; house moving promotion                                                                                                                                                                                                      | Waste Prevention 3.4<br>C&D 5.1*<br>Transfer Facilities 4.4* |
|                  | Organics Onsite      | WP12   | Continue to promote home onsite organics management: backyard composting of food scraps and landscape waste; grasscycling                                                                                                                                                                                                                                                         | Waste Prevention 3.4                                         |
|                  | Organics Onsite      | WP13   | Continue programs for commercial onsite organics management: promote restaurant and retail donations to food banks and feeding programs; work with food banks to minimize their disposal costs by diverting more food waste to composting; promoting food purchasing and preparation efficiency as a complement to programs designed to increase commercial food waste composting | Waste Prevention 3.4                                         |

## Recommendations Summary

| Strategy            | Program             | Ref No                                                                                        | Recommendation                                                                                                                                                                                                                                                                                                                                                   | 2011 Plan Section*   |
|---------------------|---------------------|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Waste Prevention    | Organics Onsite     | WP14                                                                                          | Offer consulting services to help restaurants and institutional kitchens buy and serve food with less waste, if funds available                                                                                                                                                                                                                                  | Waste Prevention 3.4 |
|                     | Organics Other      | WP15                                                                                          | For the near term, focus grant monies on schools to establish system wide approaches to school food and yard waste collection                                                                                                                                                                                                                                    | Waste Prevention 3.4 |
|                     | Organics Other      | WP16                                                                                          | Continue to press the quick-serve restaurant industry, food courts and institutional food service businesses to use primarily compostable single-use food service products                                                                                                                                                                                       | Waste Prevention 3.4 |
|                     | Organics Other      | WP17                                                                                          | Move forward with efforts that support food packaging regulation and food waste composting: proper containers are used in public areas of quick-serve restaurants and other food service businesses; food service businesses have collection contracts so materials are sent to proper processing; extensive public education to support food packaging programs | Waste Prevention 3.4 |
|                     | Product Stewardship | WP18                                                                                          | Develop a strategic framework for product stewardship actions, including assessment of products and materials that can be regulated locally or at the state level                                                                                                                                                                                                | Waste Prevention 3.4 |
|                     | Product Stewardship | WP19                                                                                          | Continue work with NWPSC, LHWMP and others to increase the range and effectiveness of product stewardship at the state level                                                                                                                                                                                                                                     | Waste Prevention 3.4 |
|                     | Product Stewardship | WP20                                                                                          | Continue support for proposed state legislation regarding return of unwanted, leftover pharmaceuticals, medical sharps and carpet                                                                                                                                                                                                                                | Waste Prevention 3.4 |
|                     | Product Stewardship | WP21                                                                                          | Monitor and support the development of plans for producer-paid end-of-life management for mercury-containing lighting products resulting from 2010 state legislation                                                                                                                                                                                             | Waste Prevention 3.4 |
|                     | Product Stewardship | WP22                                                                                          | Work with partners to determine the best strategies and timing for new state legislation covering products such as latex and oil-based paint                                                                                                                                                                                                                     | Waste Prevention 3.4 |
|                     | Product Stewardship | WP23                                                                                          | Support the NWPSC dialog regarding product stewardship for packaging and printed paper                                                                                                                                                                                                                                                                           | Waste Prevention 3.4 |
|                     | Product Stewardship | WP24                                                                                          | Continue support for the Product Stewardship Institute and the national product dialogs the institute supports                                                                                                                                                                                                                                                   | Waste Prevention 3.4 |
|                     | Product Stewardship | WP25                                                                                          | Pursue local legislation for select products, which may include take-back, where state or regional action is not forthcoming                                                                                                                                                                                                                                     | Waste Prevention 3.4 |
|                     | Product Stewardship | WP26                                                                                          | Track efforts toward product stewardship solutions for products and materials included in city's curbside collection program                                                                                                                                                                                                                                     | Waste Prevention 3.4 |
|                     | Product Stewardship | WP27                                                                                          | Monitor product stewardship programs' material reuse and recovery rates; evaluate future support compared to curbside, other existing programs                                                                                                                                                                                                                   | Waste Prevention 3.4 |
| Product Stewardship | WP28                | Emphasize job creational potential of product stewardship programs                            | Waste Prevention 3.4                                                                                                                                                                                                                                                                                                                                             |                      |
| Other WP            | WP29                | Push city departments toward additional green purchasing decisions in facilities construction | Waste Prevention 3.4                                                                                                                                                                                                                                                                                                                                             |                      |

| Strategy         | Program  | Ref No | Recommendation                                                                                                                                                                 | 2011 Plan Section*   |
|------------------|----------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Waste Prevention | Other WP | WP30   | Work for guidelines requiring more recycling and recycled-content in “standard” specifications for work in public right-of-way                                                 | Waste Prevention 3.4 |
|                  | Other WP | WP31   | Seek packaging waste reduction and more controls on chemicals purchasing to reduce toxics exposures for staff and other city facility users                                    | Waste Prevention 3.4 |
|                  | Other WP | WP32   | Contribute to standards setting for “ecolabels” and suppliers – from green office supplies to green fleets                                                                     | Waste Prevention 3.4 |
|                  | Other WP | WP33   | Incorporate end-of-life management and product stewardship into purchasing                                                                                                     | Waste Prevention 3.4 |
|                  | Other WP | WP34   | City continues its role as a resource for businesses that are utility customers and other government agencies                                                                  | Waste Prevention 3.4 |
|                  | Other WP | WP35   | Continue to include PaperCuts as a part of outreach to businesses whenever possible                                                                                            | Waste Prevention 3.4 |
|                  | Other WP | WP36   | Continue community grants, with near-term focus on schools organics reduction                                                                                                  |                      |
|                  | Other WP | WP37   | Continue to use and monitor the online junk and catalog opt-out service establish in 2011                                                                                      | Waste Prevention 3.4 |
|                  | Other WP | WP38   | Given a favorable decision in the yellow pages publishers’ lawsuit seeking to block the Phone Books Opt-Out Registry, strongly promote the opt-out service to reduce paper use | Waste Prevention 3.4 |
|                  | Other WP | WP39   | Work with phone book companies and publishers to change Washington Utilities Commission regulations that require delivery of white pages phone books                           | Waste Prevention 3.4 |

**Key**

- C&D construction and demolition
- CESQG conditionally exempt small-quantity generator
- LEED Leadership in Energy and Environmental Design
- LHWMP Local Hazardous Waste Management Program
- MRF materials recovery facility
- MSW municipal solid waste
- NWPSC Northwest Product Stewardship Council
- Ref No reference number
- SMC Seattle Municipal Code
- SPU Seattle Public Utilities
- WP waste prevention

Revising Seattle's  
Solid Waste Plan

1





**Evan Blackwell**

*The Disposable Heroes series, 2005*

Various plastics

22 x 10 x 17 inches

# Contents

|                  |                                                        |          |
|------------------|--------------------------------------------------------|----------|
| <b>Chapter I</b> | <b>Revising Seattle's Solid Waste Plan .....</b>       | <b>3</b> |
| 1.1              | What's Being Revised .....                             | 3        |
| 1.2              | Planning History Overview .....                        | 3        |
| 1.3              | Planning Process: Continuing the Vision and Goals..... | 4        |
| 1.3.1            | Regulatory and Policy Framework.....                   | 5        |
| 1.3.2            | Participants and Responsibilities.....                 | 6        |
| 1.3.3            | Keeping the Plan Up To Date.....                       | 7        |



# Chapter I REVISING SEATTLE'S SOLID WASTE PLAN

Seattle has been an international leader in solid waste management for decades. This has not been an accident. Much credit for the city's pacesetter role belongs to our public support for new and environmentally progressive solid waste programs. Consistent, thorough planning has also helped. This 2011 Plan Revision represents another step in the evolution of Seattle's solid waste system.

## I.1 WHAT'S BEING REVISED

This Plan revises Seattle's 1998 Solid Waste Plan, *On the Path to Sustainability*, as amended in 2004. The overall planning direction remains the same. However, this update presents an opportunity to step back and take a deep look at our system and possibilities for the future.

We are also taking advantage of this opportunity to create a very different document. In addition to meeting the legal requirement for a solid waste plan, this Plan will serve as a comprehensive resource document for our customers and other parties.

## I.2 PLANNING HISTORY OVERVIEW

The State of Washington's 1969 legislation RCW 70.95 set the requirement for local solid waste plans. Seattle operated under the aegis of King County's 1974 and 1982 solid waste management plans until 1989. Seattle's first solid waste plan was the 1989 Integrated Solid Waste Management Plan, *On the Road to Recovery*.

In 1987, Seattle faced a crisis with its waste management system. The last two landfills, closed in 1983 and 1986, had become Superfund sites that would cost more than \$90 million to make environmentally safe. We began hauling our garbage to the King County landfill, which radically raised its tip fees. By 1987, solid waste customer rates had increased by 82%. Seattle thought there must be a less expensive option, and set out to find it.

The Solid Waste Utility (now part of Seattle Public Utilities) considered incinerating city garbage. Citizens immediately and overwhelmingly expressed their opposition. No one wanted an incinerator in the neighborhood, and many were concerned about air pollution and final disposal of the ash. SPU responded to citizen concerns, and used the crisis as an opportunity to launch waste reduction and recycling programs that had never been attempted on so large a scale.

In 1998, Seattle prepared its second Solid Waste Management Plan, *On the Path to Sustainability*. That plan was updated by a 2004 Plan Amendment that the Washington State Department of Ecology approved in 2005.

In 2007, SPU and the Seattle City Council jointly conducted the Seattle Solid Waste Recycling, Waste Reduction, and Facilities Opportunities (Zero Waste) study. This study examined whether there were still other methods Seattle might use to reduce the amount of its solid waste and divert more from landfill disposal.

Following the 2007 study, the Mayor and City Council adopted Resolution 30990, the *Zero Waste Resolution*. The resolution re-committed the city to its 60% recycling goal for the year 2012. It also set a longer-term goal of 70% recycling by the year 2025, and outlined some additional actions and strategies for achieving these goals.

## 1.3 PLANNING PROCESS: CONTINUING THE VISION AND GOALS

The planning process for this revision involved regrouping around the vision and goals of prior planning. In writing this Plan, we are incorporating changes in the regulatory environment, involving key stakeholders, and developing a process for future Plan updates.

Seattle's 1998 Plan incorporated the key concepts of zero waste, waste prevention, sustainability, and product stewardship that continue to drive the contemporary approach to solid waste management.

### 1998 Plan Vision: Zero Waste

- Increase waste reduction and resource conservation
- Recycle 60% by 2008
- Increase the efficiency, fairness, convenience, and accessibility of services
- Expand local markets and increase purchases of recycled-content products
- Increase consumer and producer responsibility for sustainable waste management practices
- Implement the Seattle Sustainable Building Action Plan
- Improve sustainable waste management and resource conservation practices in City of Seattle operations
- Keep Seattle's neighborhoods clean and safe by partnering with communities

The 2004 Plan Amendment renewed the 1998 vision with these enhancements:

- In 2010, there is an even more streamlined solid waste system, with integrated residential and commercial contracts and services, state-of-the-art transfer and processing facilities, and minimum transport and handling.
- More local markets are available, including infrastructure for processing food waste and construction debris.
- Garbage generation is declining. Both residents and businesses recycle aggressively. Builders, manufacturers, and retailers play a major role in sustainable design and product take-back.
- Organic composting has helped restore Seattle's soils and watersheds. The city's internal waste reduction, recycling, and buy-recycled programs are exemplary.
- By 2025, there has been a radical shift in how we think about waste. Most products are designed to be readily reused or recycled, and all costs incorporated into the price of the product. Garbage disposal is obsolete. Consumers, producers, and utilities provide the most efficient infrastructure for managing different products and materials.

This 2011 Plan revision continues the trend toward a model of resource management and consideration of life-cycle costs and benefits. It aligns with the vision, key principles, and strategies in Washington State's *Beyond Waste Plan* 2009 update.

The Plan further recognizes environmentally responsible solid waste management as a cornerstone strategy in climate protection plans. And its recommendations strive for equitable distribution of the costs and benefits of Seattle's programs.

#### **Washington State Beyond Waste Vision**

We can transition to a society where waste is viewed as inefficient, and where most wastes and toxic substances have been eliminated. This will contribute to economic, social and environmental vitality.

### **1.3.1 REGULATORY AND POLICY FRAMEWORK**

Various state and local regulations, guidelines, and plans influence Seattle's solid waste planning.

State of Washington law RCW 70.95 requires solid waste plans and sets required content. In 2010, the state published *Guidelines for Development of Local Comprehensive Solid Waste Management Plans and Plan Revisions*. The state updated its solid waste plan *Beyond Waste* in 2009. Oregon State law regulates Columbia Ridge Landfill, in Arlington, Oregon, to which Seattle sends waste for disposal.

The City of Seattle has numerous ordinances, resolutions and administrative rules governing solid waste management. The 2007 **Seattle City Council Resolution 30990** (the *Zero Waste Resolution*) and city climate protection initiatives have influenced solid waste management in recent years. Seattle establishes its solid waste rules in the city's solid waste code (Seattle Municipal Code [SMC] 21.36, 21.40, and 21.44).

SPU's 2009-2014 **Strategic Business Plan** sets the priorities of the utility over 6 years. It includes updated mission and vision statements for SPU and describes the desired outcomes for our customers, and internal strategies we will put in place to achieve these outcomes. SPU actively supports the **Race and Social Justice Initiative** as part of the citywide effort to ensure that services are provided in an equitable manner to all citizens.

The City of Seattle **Department of Planning and Development** issues land use and building permits to solid waste facilities consistent with local regulations, just as they do with any development.

The **City of Seattle's Comprehensive Plan**, a collection of city-adopted goals and policies about how the city will accommodate growth over the next 20 years, incorporates planned needs for utilities, including solid waste facilities. The city has also developed **emergency plans** that include provisions for managing excess debris from an extraordinary event.

**Public Health – Seattle & King County** regulates solid waste handling facilities in Seattle and King County. Public Health, Seattle, King County, and the Suburban Cities Association jointly manage moderate risk waste (MRW) through the Local Hazardous Waste Management Program.

## 1.3.2 PARTICIPANTS AND RESPONSIBILITIES

The parties involved in planning this solid waste plan update have certain roles and responsibilities.

### Government

- **Seattle Public Utilities (SPU)** has responsibility for creating, executing, funding all City of Seattle solid waste programs and projects
- **Office of the Mayor** sets direction for all city departments, including SPU
- **Seattle City Council** is the city's legislative body and adopts the Plan by resolution
- **Washington State Department of Ecology** reviews and approves this Plan

### Other Stakeholders

- **SPU's Seattle Solid Waste Advisory Committee (SWAC)** provides policy advice and is involved throughout the planning process
- **General Public** includes residents and businesses, solid waste industry representatives, and interest groups. The public's role is played out via the Plan's public involvement process, which includes heightened efforts to reach hard-to-reach populations through innovative means. Appendix C, Public Involvement, gives detail on the public process.

Each of these parties has their own perspective on the Plan. The Plan is meant to serve as a resource for all of them. For example, regulators are interested in ensuring the Plan meets legal requirements. SPU will use the Plan to guide solid waste work in the coming years. And the public is interested in what changes are coming their way.

### I.3.3 KEEPING THE PLAN UP TO DATE

SPU will update the Plan at least as often as required by RCW 70.95, currently at least every 5 years. The steps to do so involve assessing whether the update is an *amendment* or a *revision*, as defined by Washington Department of Ecology. **Amendments**, generally, are minor adjustments to the Plan within the 5-year planning window, keeping the plan up to date for permitting and grant purposes. If it has been 5 or more years since the last Plan **revision**, the next update would most likely have to be a revision. Changes in disposal methods or facilities would also trigger a revision.

For Seattle, the **basic every-5-year process** starts about 24 months before the next update is due, with SPU conducting a thorough review of the current Plan's policies, programs and timelines. The review involves highlighting key potential changes. The key potential changes then need evaluating as to whether they'd lead the Plan update to be an amendment or revision. SPU will confer with Ecology before proceeding with either.

The update **process could also be triggered in other ways**. For example, SPU routinely reviews progress via the Annual Recycling Report. In addition to reporting recycling rates, this report describes program actions completed in the year being reported. It also includes the program actions planned for the following year. This is where minor variations from planned programs will be documented. Before the annual report is finalized, the Seattle Solid Waste Advisory Committee (SWAC) reviews it and gives comment. The final report goes to the Seattle City Council by July 1, when it is also posted on SPU's website.

If progress tracked through the Annual Recycling Report does not perform as expected, we will figure out what the problems are. The analysis could lead SPU to pursue a policy change that is significantly different from, or not contemplated in, the Plan. In that case, a Plan amendment or revision may be necessary.

In addition to reviewing the Annual Recycling Report, the SWAC discusses solid waste issues throughout the year. A new recommendation from the SWAC could also potentially trigger a Plan amendment or revision. Similarly, new directives from Seattle's elected officials could trigger a change to the Plan. Proposals from the public would be managed through SPU, our elected officials, or the SWAC. SPU is responsible for managing and supporting the discussions and related processes stemming from proposals, whatever the source. SPU ensures SWAC involvement at all stages.

Another possible trigger to launch a Plan update could be an emergency action. This Plan does include post-emergency actions to deal with solid waste and extra debris, as described in section 4.7. However, there is a chance that SPU could take an emergency action that would trigger a Plan update in normal times. SPU will inform the SWAC and other key stakeholders about such actions, as soon as that is feasible. Temporary actions will not require a Plan update. On the other hand, an emergency action could become permanent or could be seen as significant. If so, SPU will coordinate within the city, with the SWAC, and with Ecology as to whether the action triggers a Plan amendment or revision.

SPU will write Plan amendments. Amendments will be adopted after review and comment by the SWAC. SPU will also obtain any needed approvals from Seattle's elected officials as warranted by the changes. Finally, SPU will submit amendments to Ecology within 45 days of adoption.



**Chapter I**  
Revising the Plan

If a Plan revision is the right course of action, SPU will follow the steps outlined in Ecology’s “Guidelines for Development of Local Comprehensive Solid Waste Management Plans and Plan Revisions, 2010,” including public involvement. The SWAC will take part at the outset and throughout the revision process.



Seattle Solid Waste Trends

20



**Marita Dingus**

*Outdoor baby* (hanging), 2010

Pull tabs, champagne wire muselet,  
electric ceramic tubes, plastic curler  
attachments, glass

26 x 9 x 3 inches

# Contents

|                                                   |          |
|---------------------------------------------------|----------|
| <b>Chapter 2 Seattle Solid Waste Trends .....</b> | <b>3</b> |
| <b>2.1 Physical Environment .....</b>             | <b>3</b> |
| <b>2.2 Human Environment .....</b>                | <b>3</b> |
| 2.2.1 Population .....                            | 3        |
| 2.2.2 Employment.....                             | 4        |
| <b>2.3 Waste Definitions.....</b>                 | <b>5</b> |
| 2.3.1 Waste Categories .....                      | 5        |
| 2.3.2 Recycling and Disposal Definitions.....     | 5        |
| 2.3.3 MSW Sector Definitions.....                 | 6        |
| <b>2.4 MSW Recycling Measurement.....</b>         | <b>6</b> |
| 2.4.1 Residential Data .....                      | 6        |
| 2.4.2 Self-Haul Data .....                        | 7        |
| 2.4.3 Commercial Data .....                       | 7        |
| 2.4.4 Waste Prevention Data .....                 | 8        |
| 2.4.5 Waste Composition Data .....                | 8        |
| 2.4.6 Seattle Discards Model .....                | 8        |
| <b>2.5 Waste &amp; Recycling Trends .....</b>     | <b>9</b> |
| 2.5.1 Overall MSW Trends .....                    | 9        |
| 2.5.2 Sector MSW Trends.....                      | 11       |
| 2.5.3 Sector Recycling Goal Progress.....         | 12       |

## List of Figures

|                                                                                        |    |
|----------------------------------------------------------------------------------------|----|
| Figure 2-1 Seattle Overall MSW Tons Generated and Recycling Rate.....                  | 9  |
| Figure 2-2 Seattle MSW Generation Forecast through 2030.....                           | 10 |
| Figure 2-3 Total Seattle MSW Generation by Sector for 2010.....                        | 10 |
| Figure 2-4 Single-Family Waste Generated, Recycled, Disposed in Seattle 2000-2010..... | 11 |
| Figure 2-5 Multi-Family Waste Generated, Recycled, Disposed in Seattle 2000-2010.....  | 11 |
| Figure 2-6 Self-Haul Waste Generated, Recycled, Disposed in Seattle 2000-2010.....     | 11 |
| Figure 2-7 Commercial Waste Generated, Recycled, Disposed in Seattle 2000-2010.....    | 12 |

## List of Tables

|                                                                      |    |
|----------------------------------------------------------------------|----|
| Table 2-1 Seattle Population and Household Trends through 2020 ..... | 4  |
| Table 2-2 Seattle Employment Trends by Sector through 2020 .....     | 4  |
| Table 2-3 Seattle Recycling Goal Progress 2010 .....                 | 12 |



## Chapter 2 SEATTLE SOLID WASTE TRENDS

This chapter describes Seattle's physical setting, population, and solid waste generation trends. All of these factors set the landscape of the solid waste planning environment. The forecast for Seattle's population indicates increases. Employment should rise, with a shift away from manufacturing. With people and jobs increases, the total generation of discards will also rise. Robust sources of data and analytic tools support projections and progress tracking.

### 2.1 PHYSICAL ENVIRONMENT

Seattle enjoys a central location in the Greater Puget Sound Region. The city takes up just over 142 square miles, including nearly 60 square miles of water. Puget Sound borders the city to the west, with Lake Washington bordering to the east. Some of the city's terrain is hilly, and the entire region is in a major earthquake zone. Seattle's marine climate is mild year-round, with wet winters and relatively dry summers.

Seattle's two major north-south transportation corridors are State Hwy 99 (Aurora Ave through much of the city) and Interstate 5. Interstate 90 connects eastward to the rest of the country. Seattle is also well serviced by rail lines to the north, south, and east. Washington State ferries are the city's major connection to the west.

### 2.2 HUMAN ENVIRONMENT

Demographic factors important for solid waste planning include population, household trends, and employment trends. Outreach planners need information on the various languages spoken in the city. From looking at employment trends, SPU learns what kinds of businesses (and their attendant wastes) will be contributing to the commercial waste stream.

#### 2.2.1 POPULATION

Seattle's population is forecast to increase by almost 8% between 2010 and 2020 (Table 2-1). Over the same period, numbers of single-family homes will increase by about 3% and multi-family units by about 12%.

**Table 2-1  
Seattle Population and Household Trends through 2020**

| Year                                           | 2000    | 2005    | 2010    | 2015    | 2020    |
|------------------------------------------------|---------|---------|---------|---------|---------|
| Population <sup>1</sup>                        | 563,374 | 573,076 | 608,660 | 631,350 | 655,947 |
| Occupied Household <sup>1</sup>                | 258,481 | 266,204 | 283,510 | 294,158 | 303,557 |
| Single-Family thru 4-plex units <sup>2</sup>   | 153,853 | 151,217 | 158,533 | 162,376 | 163,724 |
| Multi Family with 5 or more units <sup>2</sup> | 104,628 | 114,987 | 124,977 | 131,782 | 139,833 |
| Average Household Size                         | 2.180   | 2.153   | 2.147   | 2.146   | 2.161   |

<sup>1</sup>Source: Puget Sound Regional Council 2011

<sup>2</sup>Source: SPU Accounts

According to the American Community Survey 2009, 79% of Seattle's population speaks English only. About 6% are "linguistically isolated," which means they feel proficient only in a language that is not English.

## 2.2.2 EMPLOYMENT

Employment forecasts show Seattle employment rising through the year 2020 (Table 2-2). The numbers of employees in each type of sector factor into the volumes and types of waste generated from businesses. The office sector employs more than twice as many people as the next highest sector, health and education. The third highest sector is services. All employment sectors are forecast to rise except manufacturing.

**Table 2-2  
Seattle Employment Trends by Sector through 2020**

| Year                                    | 2000    | 2005    | 2010    | 2015    | 2020    |
|-----------------------------------------|---------|---------|---------|---------|---------|
| Manufacturing                           | 45,195  | 37,646  | 36,973  | 37,693  | 36,053  |
| Wholesale and Retailer                  | 54,544  | 49,219  | 47,522  | 51,852  | 53,871  |
| Food Services and Drinking Places       | 27,682  | 26,865  | 25,939  | 29,429  | 32,531  |
| Services                                | 59,062  | 55,264  | 58,479  | 76,657  | 91,025  |
| Office                                  | 187,663 | 174,895 | 177,473 | 181,314 | 191,925 |
| Health and Education                    | 81,211  | 76,758  | 78,809  | 89,412  | 98,836  |
| Food and Beverage Stores                | 9,644   | 8,984   | 8,675   | 9,842   | 10,879  |
| Transportation, Hotels and Construction | 52,200  | 46,668  | 46,470  | 52,723  | 58,279  |
| Total                                   | 517,201 | 476,299 | 480,340 | 528,922 | 573,399 |

Sources: SPU estimates; Washington State Employment Security Dept. data; and SPU forecast model (updated March 2, 2011)

Waste generation directly correlates with economic cycles. MSW generation (garbage plus recycling and organics) dropped with the recession after the economic high of 2007. SPU expects total generation to rise again as the economy recovers, minus the effects of waste prevention programs.

## 2.3 WASTE DEFINITIONS

Terminology for waste can be confusing. The following section describes key terms applied to categories of solid waste.

### 2.3.1 WASTE CATEGORIES

There are several categories of wastes (discarded materials) generated in Seattle.

**Municipal Solid Waste** — MSW includes all the garbage, recycling, and organics (yard and food waste) collected from within Seattle and hauled to the city's recycling and disposal (transfer) stations. It also includes some construction and demolition (C&D) wastes that are disposed at city transfer stations or placed in residential or business garbage containers. See Chapter 4, Seattle's MSW System: Managing Discards.

**Construction, Demolition and Land-clearing Debris** — This category is called construction and demolition or C&D. C&D includes wood waste, metals, asphalt roofing, gypsum, and other materials generated by construction activities that is not disposed at city-owned transfer stations or mixed with MSW garbage. It is managed separately from MSW for recycling and disposal. See Chapter 5, Other Solid Waste Programs, section 5.1 for detail on C&D.

**Moderate Risk Waste** — MRW includes household hazardous waste (HHW) and small quantity generator waste (SQGW). Seattle manages its MRW through a joint program supported and implemented by the City of Seattle, King County, Public Health - Seattle & King County, and the Suburban Cities Association. The joint program, the Local Hazardous Waste Management Plan, guides MRW management. See Chapter 5, Other Seattle Solid Waste Programs, section 5.4 for information on MRW.

**Other Special Categories of Waste** — These are wastes not allowed in the MSW. They require special handling and disposal due to regulatory requirements or other reasons such as toxicity, volumes, or particular handling issues. Examples include biomedical, asbestos, biosolids, and dangerous wastes. See Chapter 5, Other Seattle Solid Waste Programs, section 5.5 for detail on this category.

### 2.3.2 RECYCLING AND DISPOSAL DEFINITIONS

Recycling and disposal are categorized into many modes and methods.

**Waste Prevention** — Used interchangeably with "waste reduction," and sometimes called "pre-cycling." This is the practice of minimizing waste through responsible purchasing and consumerism. Essentially, this practice removes waste from the waste stream by not creating it in the first place.

**Recycling** — Recycling remanufactures or transforms waste materials into usable or marketable materials, including organics (food and yard debris) into compost.

**Disposal** — When Seattle disposes waste, the waste materials are permanently placed in a landfill. Seattle counts beneficial use, alternative daily cover (ADC) and industrial waste stabilizer (IWS) as disposal for the MSW recycling rate calculation.

**Beneficial Use** — Neither recycled nor reused, the waste materials are used for some other purpose like industrial boiler fuel.



**Alternative Daily Cover (ADC) and Industrial Waste Stabilizer (IWS)** — ADC refers to materials used to cover the active face of a landfill instead of soil. IWS includes waste materials deposited to provide structure in specialized landfills.

**Diversion** — This term includes recycling and beneficial use. SPU calculates diversion for the C&D stream.

### 2.3.3 MSW SECTOR DEFINITIONS

Seattle's MSW waste is generated by four sectors.

- **Residential – Single-Family.** This sector includes waste picked up from homes that have cans or carts picked up at the curb. These are typically single-family homes, up to and including four-plexes.
- **Residential – Multi-Family.** The multi-family sector is for waste picked up from residential buildings or complexes that have dumpster or detachable container service. Typically, these buildings have five or more housing units.
- **Commercial.** This sector includes businesses. Typically, dumpsters are picked up as needed by the account that serves these commercial buildings.
- **Self-Haul.** The self-haul sector is that part of our system where residents and businesses bring various materials for drop-off at city-owned transfer stations.

See Chapter 4, Seattle's MSW System: Managing Discards, section 4.3 for information about the MSW sectors.

## 2.4 MSW RECYCLING MEASUREMENT

Existing programs are measured by a variety of means depending on the program. SPU's core measurement and reporting is done by MSW sector. We also measure waste prevention to the extent possible. The primary vehicle for reporting recycling progress is the City of Seattle Annual Recycling Report. C&D measurement is not included in the annual calculations of Seattle's progress towards its MSW 60% recycling goal. See Chapter 5, Other Seattle Solid Waste Programs, section 5.1 for information about C&D trends.

### 2.4.1 RESIDENTIAL DATA

SPU's residential data come from reporting requirements built into our collection contracts. We have data for each truck trip through a Seattle neighborhood to a processing center. Weekly trip data include the total of all materials collected as garbage, recycling, and organics. SPU summarizes the data quarterly (showing monthly data) and posts the summaries on the SPU website.

SPU also conducts periodic studies where materials put out for collection are sorted and measured to determine what is in the collected material. These periodic sorts are called *composition studies*.

The organics collection program is similar in that SPU receives data at the truck trip level from the residential collection contractors. The composition of the organics container (how much is

food waste versus how much is yard waste) is estimated using the [Seattle Discards Model](#), a statistical model that separates out the tons based on historical data relationships.

The oil and electronics collected curbside are tracked via monthly reports from the contractors.

SPU measures onsite (home) organics programs using a variety of information sources. The most important information is that from the Home Organics Survey. SPU conducts this survey every 5 years to update our understanding of home organics practices. Information on how many households compost and grass cycle is combined with other data on average amounts of yard and food waste per household. SPU uses all of these data to estimate the number of tons diverted through the home organics programs. Since we do the Home Organics Survey only every 5 years, estimates for tons diverted remain constant for 5 years until SPU has new data to re-estimate the tons diverted.

## 2.4.2 SELF-HAUL DATA

Recycling in this sector consists of 1) self-hauled organics (for composting), and 2) a variety of other recyclable materials placed in drop boxes.

SPU uses scale house data (weight and trip) as customers enter the station to measure tons brought into transfer stations for compost. SPU also has data on how much compost material we haul from the stations to processing facilities. Having both sets of data serves as a check on the total tons of compost material. Compost tons are reported quarterly (monthly data) in the Residential Organics Report.

Drop-box recycling tons are weighed when SPU hauls the material to the various processors. Typically, customers who bring in material to recycle do not weigh in their vehicles. Instead, the data source is outbound weight reports from the trucks that haul recyclables away from the stations.

In addition to reporting these data annually as part of the Annual Recycling Report, SPU is required to report the data to the Washington State Department of Ecology.

## 2.4.3 COMMERCIAL DATA

The primary source of information for the commercial sector comes from annual reports required from recyclers and processors. Recyclers who operate in Seattle must submit the reports as part of their City of Seattle Recyclers Business License. Specifically, recycling businesses must report annual tons recycled, by material, and disposition of the material. Once SPU receives the reports, we analyze them at length to make sure we do not double count tons. (It is common for one recycler to collect material and then transfer it to another processor). The City of Seattle mails a form to recyclers in February with a completion deadline of March 31. For the 2010 report, SPU mailed forms to more than 150 companies.

In addition to the recyclers' reports, SPU receives detailed trip level data for compost and recycling tons collected under our collection contracts. These tons are currently combined with the information from the recyclers' reports and reported in the Annual Recycling Report.

## 2.4.4 WASTE PREVENTION DATA

SPU's waste prevention programs reduce the amount and toxicity of material entering Seattle's waste system. For the annual recycling rate, we estimate the tons of prevented waste and count them as recycling.

Other than for the home organics programs, SPU tracks waste prevention on a program-by-program basis. We use a variety of methods to measure tons not generated. These methods include the following: self-weighing; pre- and post-intervention surveys (attitudes, behaviors, participation rates); collection data; composition studies; and estimation (modeling). The best approach is to build evaluation methodology into new waste prevention programs and campaigns.

Less waste generated per person would seem to imply more waste prevention. However, it is very difficult to separate the effects of the waste prevention program from other variables like changes in household size, the economy, types of businesses in Seattle, and products.

## 2.4.5 WASTE COMPOSITION DATA

Waste composition—what mix of materials is going to disposal—is assessed every 4 years, on staggered cycles by sector. These studies sort and weigh the disposed materials into dozens of categories. The studies are available on [SPU's website](#).

The studies contribute key data for the Recycling Potential Assessment (RPA) modeling described in Chapter 4, Seattle's MSW System: Managing Discards, section 4.3. See also Appendix D, Recycling Potential Assessment Model for more RPA detail.

## 2.4.6 SEATTLE DISCARDS MODEL

The Seattle Discards Model (SDM) is a tool SPU uses to analyze recycling performance. The SDM establishes a relationship between garbage, recycling, and organics (food and yard debris) monthly collection quantities, and the factors that affect (or "explain") these discards amounts. For instance, one equation in the model estimates the impacts of increased household size or additional household income on the amount of discards that households place in the curbside recycling stream. Another part of the equation estimates the impacts on residential garbage from similar changes.

The SDM contains a set of equations to calculate expected garbage, recycling, and organics discard quantities depending on factors such as:

- Unemployment rate
- Housing prices
- Household size
- Actual status of household income
- Average and marginal fees for collection
- Other factors such as temperature and precipitation

If a new factor (or a shock to the system) emerges, such as the introduction of a disposal ban, the SDM can isolate the tonnage impact of the ban from the other factors that are also affecting waste tonnage.

The SDM includes equations for residential garbage, residential recycling, residential organics, self-haul garbage, and commercial garbage. Each equation has its own set of factors, which explain the various garbage and recycling streams. Variables in the equations have changed over time, but the overall methodology is the same.<sup>1</sup>

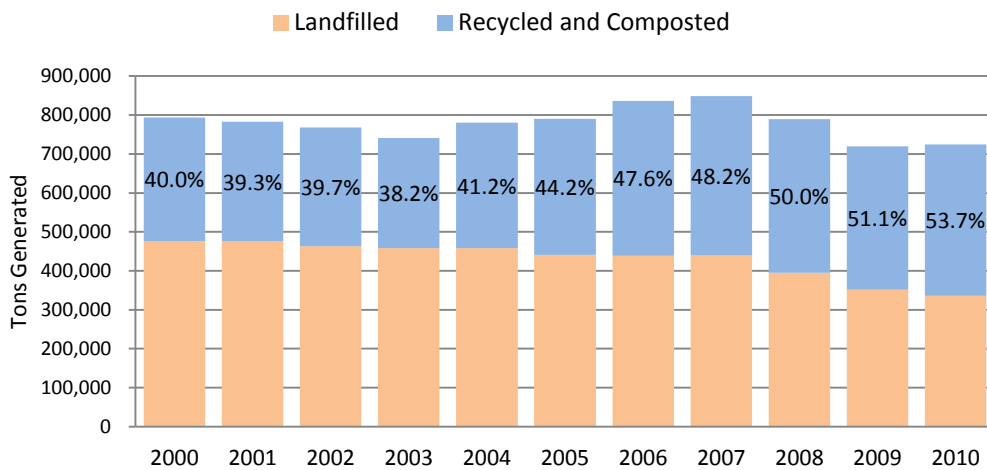
## 2.5 WASTE & RECYCLING TRENDS

This section describes year-over-year waste and recycling trends in Seattle.

### 2.5.1 OVERALL MSW TRENDS

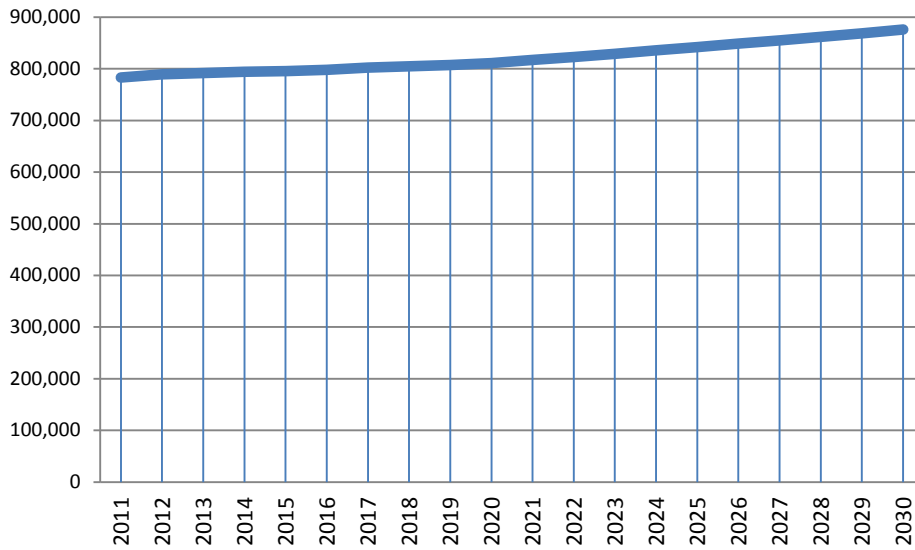
Seattle's overall MSW generation has generally followed economic trends, even as population has steadily increased in our city (Figure 2-1). The overall recycling rate declined the first few years of the past decade then has steadily climbed since 2003. SPU expects overall waste generation to increase gradually over the planning horizon of this Plan (Figure 2-2).

**Figure 2-1  
Seattle Overall MSW Tons Generated and Recycling Rate**



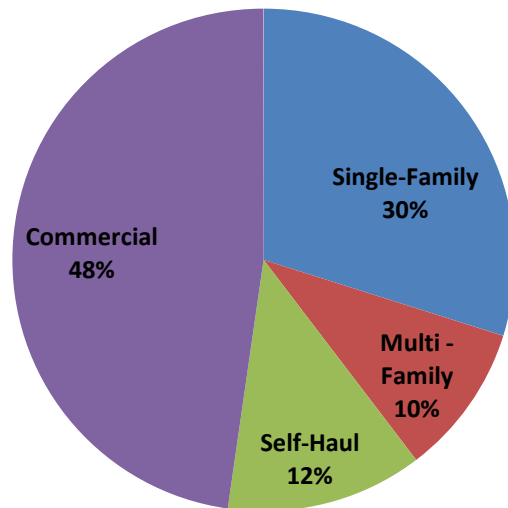
<sup>1</sup>A complete technical explanation of the model can be found in "The Seattle Discards Model: An explanatory Model for Garbage, Recycling and Yard Debris Collection and Self Haul Quantities," SPU, December 2005.

**Figure 2-2**  
**Seattle MSW Generation Forecast through 2030**



Overall generation is the sum of each sector's share of all discards. Proportionally, shares shift a bit over time. Figure 2-3 shows shares from 2010 and illustrates that the commercial sector generated almost half of Seattle's discards. The single-family sector contributed almost one-third of Seattle's MSW.

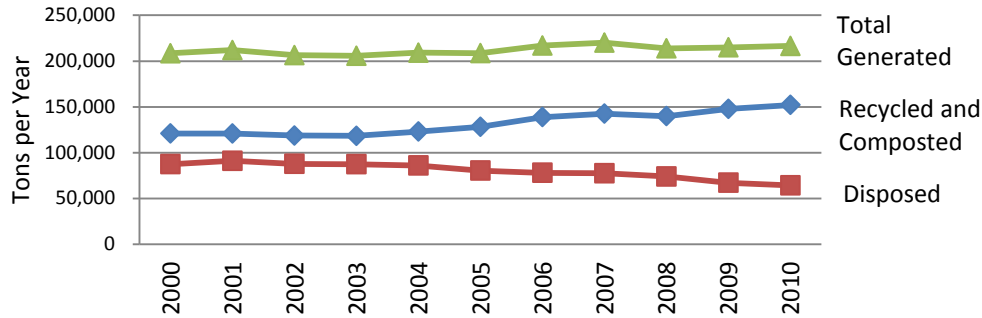
**Figure 2-3**  
**Total Seattle MSW Generation by Sector for 2010**



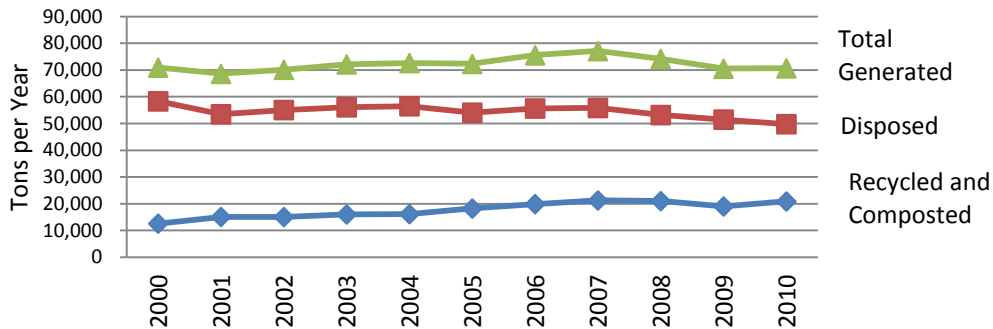
## 2.5.2 SECTOR MSW TRENDS

As described in this chapter, SPU [tracks MSW and recycling performance trends](#) by each of the four MSW sectors. The following figures illustrate trends for material amounts entering each sector and recycling performance (Figures 2-4 through 2-7).

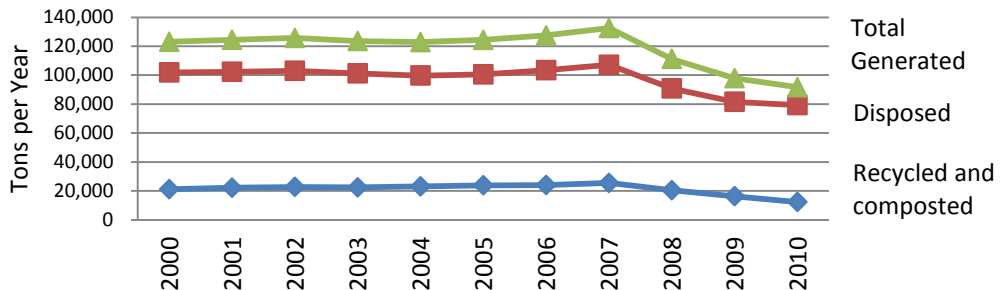
**Figure 2-4**  
**Single-Family Waste Generated, Recycled, Disposed in Seattle 2000-2010**



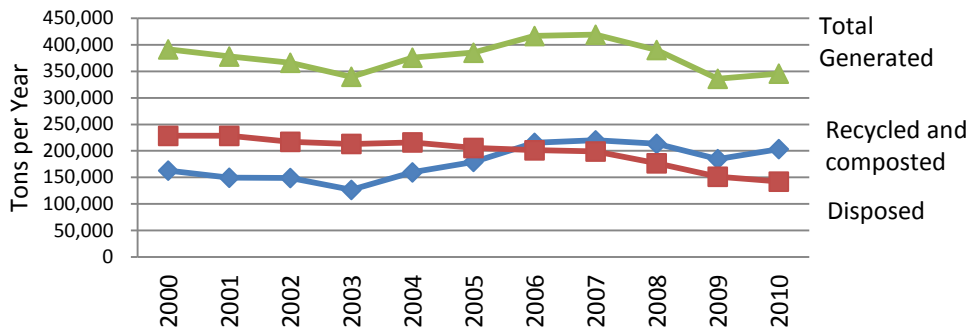
**Figure 2-5**  
**Multi-Family Waste Generated, Recycled, Disposed in Seattle 2000-2010**



**Figure 2-6**  
**Self-Haul Waste Generated, Recycled, Disposed in Seattle 2000-2010**



**Figure 2-7**  
**Commercial Waste Generated, Recycled, Disposed in Seattle 2000-2010**



### 2.5.3 SECTOR RECYCLING GOAL PROGRESS

Seattle has made substantial progress toward the recycling goals set in the 2004 Amendment. The overall goal was a 60% recycling rate. Within that goal, each sector had its own target (Table 2-3) and varying success toward reaching the target.

**Table 2-3**  
**Seattle Recycling Goal Progress 2010**

| Sector                 | 2000  | 2002  | 2004  | 2006  | 2008  | 2010  | Goal set 2004 |
|------------------------|-------|-------|-------|-------|-------|-------|---------------|
| Single-Family          | 58.0% | 57.5% | 58.9% | 64.0% | 65.4% | 70.3% | 70.0%         |
| Multi-Family           | 17.8% | 21.5% | 22.2% | 26.3% | 28.3% | 29.6% | 37.0%         |
| Self-Haul              | 17.2% | 18.1% | 18.8% | 18.8% | 18.4% | 13.5% | 39.0%         |
| Commercial             | 41.6% | 40.7% | 42.5% | 51.7% | 54.7% | 58.9% | 63.0%         |
| Combined - All Sectors | 40.0% | 39.7% | 41.2% | 47.6% | 50.0% | 53.7% | 60.0%         |

More needs to be done to increase Seattle’s recycling rate. The recycling recommendations in Chapter 4, Seattle’s MSW System: Managing Discards, section 4.3 contain a variety of initiatives to increase recycling in all sectors.



Waste Prevention





**Evan Blackwell**  
*Untitled Eusapia*, 2010  
Wood window frames  
36 x 38 x 2.5 inches

# Contents

|                                                                    |           |
|--------------------------------------------------------------------|-----------|
| <b>Chapter 3 Waste Prevention .....</b>                            | <b>3</b>  |
| <b>3.1 Recommendations from 1998 Plan and 2004 Amendment .....</b> | <b>3</b>  |
| <b>3.2 Planning Issues for this Update .....</b>                   | <b>5</b>  |
| 3.2.1 Zero Waste Resolution.....                                   | 5         |
| 3.2.2 Recession.....                                               | 5         |
| 3.2.3 <i>Beyond Waste</i> .....                                    | 6         |
| 3.2.4 Product Stewardship Legislation .....                        | 6         |
| 3.2.5 Green Jobs .....                                             | 10        |
| <b>3.3 Current Programs and Practices .....</b>                    | <b>10</b> |
| 3.3.1 Reuse .....                                                  | 10        |
| 3.3.2 Sustainable Building.....                                    | 11        |
| 3.3.3 Organics.....                                                | 14        |
| 3.3.4 Product stewardship.....                                     | 17        |
| 3.3.5 Other Waste Prevention Activities.....                       | 21        |
| <b>3.4 Alternatives and Recommendations.....</b>                   | <b>24</b> |
| 3.4.1 Reuse .....                                                  | 24        |
| 3.4.2 Sustainable Building.....                                    | 26        |
| 3.4.3 Organics.....                                                | 26        |
| 3.4.4 Product Stewardship .....                                    | 28        |
| 3.4.5 Other Waste Prevention Activities.....                       | 29        |
| <b>3.5 Measurement .....</b>                                       | <b>31</b> |
| 3.5.1 Reuse .....                                                  | 31        |
| 3.5.2 Sustainable Building.....                                    | 31        |
| 3.5.3 Organics.....                                                | 31        |
| 3.5.4 Product Stewardship .....                                    | 32        |
| 3.5.5 Other Waste Prevention Activities.....                       | 32        |
| 3.5.6 Overall Generation.....                                      | 33        |

## List of Figures

|                                                                                  |   |
|----------------------------------------------------------------------------------|---|
| Figure 3-1 Producer Cost Internalization and Recovery Fees Change Who Pays ..... | 8 |
|----------------------------------------------------------------------------------|---|

## List of Tables

|                                                                                                     |    |
|-----------------------------------------------------------------------------------------------------|----|
| Table 3-1 Seattle Waste Prevention Goals 1998 and 2004.....                                         | 4  |
| Table 3-2 SPU Food Recovery Investments 2006 – 2010 .....                                           | 15 |
| Table 3-3 <i>Pharmaceuticals: A Return Mechanism Pilot Program</i> Pounds Disposed 2007 - 2009..... | 18 |
| Table 3-4 Planned Evaluation Schedule for Problem Products and Packaging in Seattle .....           | 20 |



## Chapter 3 WASTE PREVENTION

Waste prevention removes waste from the waste stream by not creating it in the first place. It is sometimes referred to as waste reduction or *precycling*. Seattle Public Utilities' waste prevention programs promote more careful purchasing and consumption by institutions and individuals. These programs also promote more efficient use of materials in business and industrial activities. This chapter describes SPU's waste prevention programs under the 1998 Solid Waste Plan and 2004 Plan Amendment. It also discusses issues for waste prevention planning, recommendations for the future, and approaches to waste prevention measurement.

### 3.1 RECOMMENDATIONS FROM 1998 PLAN AND 2004 AMENDMENT

In the 1998 Plan, SPU outlined and in the 2004 Amendment reaffirmed waste prevention programs in the following areas (Table 3-1):

- **Reuse** — programs promoting goods and materials exchange opportunities to residents and businesses
- **Onsite Organics** — programs for backyard composting, grasscycling, and pesticide use reduction under a “Natural Lawn and Garden Care” theme
- **Sustainable Building** — U.S. Green Building Council's Leadership in Energy & Environmental Design (LEED) standards for city-owned buildings. Sustainable building includes promotion of building materials salvage and recycling.
- **Product Stewardship** — participation in the inter-governmental Northwest Product Stewardship Council and the national Product Stewardship Institute. Stewardship includes support for state legislation requiring producer responsibility for end-of-life materials management.
- **Other Waste Prevention Activities** — expanded City of Seattle green purchasing practices. Other activities include public education on better or safer products to use and general waste reduction through SPU publications, media, and SPU's outreach consultant.

In the sections that follow, these programs are described in detail, including the changes they've undergone over time.

**Table 3-1  
Seattle Waste Prevention Goals 1998 and 2004**

| Recommendation                                                                                                                                                                                               | Status                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1998 Plan</b>                                                                                                                                                                                             |                                                                                                                                                                                                                              |
| Increase waste reduction and resource conservation                                                                                                                                                           | Ongoing                                                                                                                                                                                                                      |
| Increase consumer and producer responsibility for sustainable waste management practices                                                                                                                     | Ongoing<br>Notable success in producer responsibility for electronic wastes                                                                                                                                                  |
| Implement Seattle Sustainable Building Action Plan                                                                                                                                                           | Ongoing<br>New and renovated city buildings meeting Leadership in Energy and Environmental Design (LEED) standards                                                                                                           |
| Incorporate waste prevention into broader conservation message                                                                                                                                               | Ongoing                                                                                                                                                                                                                      |
| Maximize impacts of conservation messages by partnering with other agencies                                                                                                                                  | Ongoing<br>Partnerships with King County and Local Hazardous Waste Management Program, and others                                                                                                                            |
| Target high-quantity materials, especially yard debris                                                                                                                                                       | Banned landscape waste from residential and commercial garbage. Continuing increases in compostable materials collected curbside                                                                                             |
| <b>2004 Amendment</b>                                                                                                                                                                                        |                                                                                                                                                                                                                              |
| Increase waste reduction and resource conservation                                                                                                                                                           | Ongoing                                                                                                                                                                                                                      |
| Increase consumer and producer responsibility for sustainable waste management practices                                                                                                                     | Ongoing<br>Successes in product stewardship for electronic waste and mercury-containing lighting, Styrofoam food packaging ban and requirement that single-use food service packaging be compostable or recyclable           |
| Implement Seattle Sustainable Building Action Plan                                                                                                                                                           | Ongoing<br>With new regulations for deconstruction and increasing regulation of C&D wastes                                                                                                                                   |
| Reduce toxic products in waste stream                                                                                                                                                                        | Increased electronic waste recycling with E-Cycle Washington. Upcoming mercury lighting producer-paid end-of-life management. Green purchasing steadily improving                                                            |
| Continue to incorporate waste prevention into multi-dimensional conservation programs                                                                                                                        | Ongoing                                                                                                                                                                                                                      |
| Expand city's waste prevention activities to incorporate waste prevention targets established in "Sustaining our Commitment," Mayor Nickels' Plan to Reaffirm Seattle's Leadership in Recycling January 2003 | Done                                                                                                                                                                                                                         |
| Focus on high-volume materials (paper and organics) and high-toxicity materials such as mercury                                                                                                              | Ongoing<br>Ban on paper and yard debris in residential and commercial collection. High-toxicity products primarily addressed by Local Hazardous Waste Management Program initiatives, or regulated through state legislation |
| Develop programs to influence organizational not just individual behavior                                                                                                                                    | Ongoing<br>Includes green purchasing, institutional food service efficiency, and food service packaging regulations                                                                                                          |
| Establish methodology to measure non-SPU sponsored commercial waste prevention activities and give credit to businesses for waste prevention efforts                                                         | Ongoing<br>Most effective in construction and demolition (C&D) salvage, deconstruction and recycling programs                                                                                                                |

## 3.2 PLANNING ISSUES FOR THIS UPDATE

This Plan update responds to a number of changes in the financial, political, and regulatory environment for waste prevention. It is also informed by the understanding SPU has gained from the past 5 years of program implementation. In those years, climate change has increased the importance of green house gas reduction in every area of city activity. Waste prevention is no exception. Reduction in materials, their use, and shifts in product design from disposable to recyclable are issues in this Plan.

### 3.2.1 ZERO WASTE RESOLUTION

City Council actions led to the biggest changes in SPU waste prevention activities. Those directives have called for definitive results over the next few years. Chief among the policy directives is Resolution 30990, known as the *Zero Waste Resolution*, passed in June 2007. The Zero Waste Resolution instructed SPU to:

- Increase support for the Northwest Product Stewardship Council
- Study problem (hard-to-recycle) products and propose strategies. The emphasis should be on the application of product stewardship principles. Strategies range from bans to market development that would reduce the presence of these products in the waste stream.
- Study bans of plastic shopping bags and expanded polystyrene (EPS, sometimes called Styrofoam) food service ware
- Participate in the state’s electronic products take-back system, E-Cycle Washington
- Create a program of community waste prevention matching grants
- Develop strategies to increase recycling by customers self-hauling waste to the city’s recycling and disposal stations
- Work with the Department of Planning and Development (DPD) to modify the demolition permit process to increase building materials salvage
- Increase waste-reduction audits and education for business and single- and multi-family customers

Actions in most of these areas have become part of the City of Seattle’s waste prevention programs.

### 3.2.2 RECESSION

A second large influence on the City of Seattle’s waste prevention programs was unanticipated. The deep recession beginning in 2007 reduced SPU revenue, which resulted in deep cuts in the waste prevention budget. Most programs—with the notable exception of support for recyclable and compostable food service packaging—will be curtailed, possibly, for several years. For example, SPU put further study of problem products (toxic and hard-to-recycle materials, or recyclables still unsupported by markets) on hold at the end of 2009.

### 3.2.3 BEYOND WASTE

Among regulatory changes, the Washington State Department of Ecology (Ecology) released its revised *Beyond Waste* comprehensive plan for the state. Notable among its recommendations for waste prevention is a call for greater attention to the “technical nutrient cycle.” This concept forces attention on closed-loop systems for processing and reuse of materials. The idea is to minimize “down-cycling” of materials into lower value products. SPU plans to address this mandate two ways:

1. Continued emphasis on market development for under-recycled materials
2. Work with the industrial sector to promote exchange of process byproducts from businesses that need to discard materials to those that can use them in production.

The new *Beyond Waste* plan also calls out waste prevention for product packaging. Seattle is already deeply involved in single-use food service ware and packaging regulations. The City of Seattle also participates on the Northwest Product Stewardship Council’s packaging subcommittee, which is examining packaging regulations used in Europe and Canada.

Reuse is a key part of the state’s *Beyond Waste* hierarchy of “reduce, reuse, recycle.” Reusing consumer products and industrial materials (such as production byproducts) slows the frequency of product and materials replacement. It also reduces green house gas generation from producing new products, whether of virgin or recycled materials.

In general, product and materials reuse is the result of individual or individual business decisions. Consequently, policies promoting reuse mostly emphasize public education, attempting to change behavior by changing attitudes and beliefs. Reuse programs need to be designed to make it easy for the public and businesses to take action—choosing charitable donation rather than disposal, for example. Only rarely does reuse policy directly involve regulation.

### 3.2.4 PRODUCT STEWARDSHIP LEGISLATION

Product stewardship is a strategy that places responsibility for life-cycle environmental impacts on designers, producers, marketers, and users of products. Product stewardship is often called *Extended Producer Responsibility* or EPR. It seeks to minimize environmental impacts, including reducing toxic contents, throughout a product’s life cycle. Greatest responsibility lies with whoever has the most ability to affect the life-cycle environmental impacts of a product. That is usually the producer or “brand owner.”

New product stewardship legislation in Washington State and nationally has spurred interest in producer responsibility strategies for waste prevention, increasing recycling, and managing waste. Legislation is a key tool by which producers may be charged with funding and managing products at the end of product life.

#### Product Stewardship Changes Who Pays and How

Producers may bear the costs of reuse and materials recycling programs in two ways. One is cost internalization, in which end-of-life costs are included in a product’s price (as they are in the E-Cycle Washington program). This is generally the preferred alternative. Another way for producers to bear the costs is by paying fees to local solid waste agencies. Producers, stewardship organizations acting for groups of producers, or even product users may be subject

to the fees. Currently, solid waste and recycling collection and processing is almost entirely a local government responsibility paid for by residents and businesses in the local service area.

### **Cost Internalization (Recovery Built into Product Price)**

Producer funded take-back services have emerged as the model for producer funded recovery programs. These services include waste handling that is funded or provided by producers of materials. The materials are (mostly) handled outside the city solid waste system. Products already covered by producer product stewardship programs, or under consideration at the state level, include electronics, pharmaceuticals, carpet, and products containing mercury. The list continues to grow with legislation for paint and rechargeable batteries under consideration in 2012. In this case, the program funding is from producers through a stewardship organization.

### **Targeted Fees (Extra Charges for Recovery)**

In lieu of statewide programs, Seattle has in some cases adopted or considered “recovery” fees, which may be applied in a variety of ways depending on program goals:

- **Consumer Recovery Fees** — These fees are designed to affect consumer choices and are charged when a product is purchased. There are at least two types:
  - A fee established as a City of Seattle solid waste fee and remitted to the Solid Waste Fund to cover solid waste services.
  - A fee required by city regulation to be charged by businesses, to discourage purchase or use of a product, and retained by the seller to cover fee administration costs.
- **Producer Paid Recovery Fees** — Producers, or in some cases retailers, may pay fees to the Solid Waste Fund when a product is either sold or distributed. SPU would use these fees to pay for recycling or disposal of that product. It could also use the revenue for waste reduction programs designed to reduce demand for (or waste associated with) that product.
- **SPU Rates** — Rates are charged for city handling of products that have been used and discarded as solid waste. Rates are based on what is discarded rather than on what is bought or distributed (the focus of recovery fees). Products suited to rate funding include food waste and yard waste.

While cost-internalized, industry-paid stewardship programs are the best approach, visible targeted fees might be considered for specific products or materials to:

- Recover collection and disposal costs
- Divert toxic or other problem materials in the absence of state regulation
- Affect consumer choices to reduce or avoid use of a product or material
- Promote waste reducing product and packaging redesign
- Place responsibility and management costs on producers and users of various products rather than on the entire community of solid waste ratepayers
- Discourage use of products intended for one-time use when reusable alternatives are available

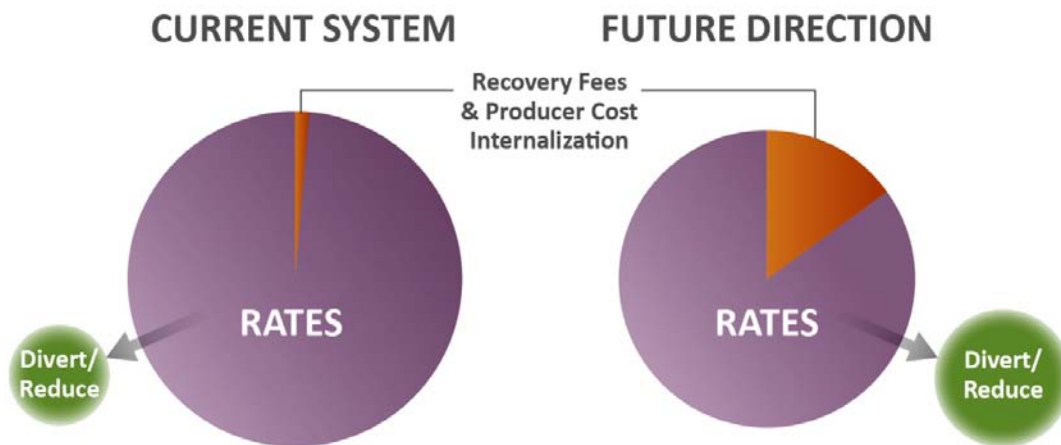


## Product Stewardship Changes Behaviors

An expected outcome from requiring producers to pay for end-of-life management of what they make is more attention to product design, to make reuse and recycling easier. Reuse or recycling is preferred whenever possible.

Product stewardship can also influence consumer behavior (Figure 3-1). As product stewardship costs are either internalized into the cost of the product, or made visible to the buyer as “advance recovery fees” or “eco fees,” consumers may choose to purchase less and to buy less wasteful products.

**Figure 3-1**  
**Producer Cost Internalization and Recovery Fees Change Who Pays**



## Product Stewardship Eases Ratepayer Burden

Cost internalization and fees for end-of-life product management both ease the burden on general solid waste ratepayers through:

- Industry established and managed reuse and recycling programs, such as take-back services, that prevent products from entering the MSW system
- Producers paying local jurisdictions for managing the material, in cases where that is a more effective strategy

## Strategic Considerations

Product and materials impacts extend across jurisdictions. Industry prefers state or federal regulation to “level the playing field.” For that reason, producer take-back programs generally have been pursued through statewide legislation and programs rather than through City of Seattle efforts. These regulations are often intended to divert waste from the city solid waste system. For example, the E-Cycle Washington program for computers, “tablet” sized devices,

and televisions diverts all those products from MSW to a separate collection system funded by manufacturers.

A disposal ban of certain materials (such as hazardous materials) might be used in conjunction with a producer take-back or a government-sponsored special collection and management system. Seattle has also used disposal bans in conjunction with rate design to shift materials from garbage to recycling or compostable waste.

The following questions need to be answered in planning new product stewardship programs:

- **Who pays?**
  - consumer at time of purchase
  - retailer or producer through “cost internalization” (where recovery cost is imbedded in the price of the product and not visible)
- **Who receives the revenue?**
  - City of Seattle Solid Waste Fund
  - retailers selling a targeted product
  - a third-party organization (which then remits to a service provider, City of Seattle or contractor)
- **How high should fees be?**
  - charges sufficient to cover city handling and disposal costs
  - additional funding for city waste reduction and recycling programs. For example, the yellow pages opt-out system run by the city is paid for by a fee charged to publishers.
  - a level high enough to encourage consumers to make waste reducing choices
- **What should the revenue be used for?**
  - funding the City of Seattle solid waste system generally
  - specific waste reduction and recycling programs
  - cost recovery for recycling or disposal of specific products
  - cost sharing with retail or other product take-back locations
- **How should recovery or producer charges be administered?**
  - as a City of Seattle solid waste fee independent of rates
  - as part of City of Seattle solid waste rates and charges adopted with rates
  - as regulations requiring retailers to add a charge for a product
  - via producer paid and managed recycling or disposal outside the City of Seattle solid waste system

Other items to address when analyzing potential city product stewardship actions include:

- **Timeline?** Is statewide product stewardship legislation likely only in the distant future? If so, should Seattle:
  - use these strategies in individual cases when the opportunity exists, or
  - formalize a long-term strategy into which near-term actions will fit?
- **One product at a time or groups of products?** Are there administrative or legal advantages to placing recovery fees on multiple products with similar characteristics at the same time? This is in contrast to one-at-a-time legislation that regulates a single product.
- **Are advance fees an efficient cost recovery system?** If advance fees are collected in many venues and remitted to SPU, is it efficient to administer both a system of advance fees and SPU bills? Does the tonnage reduction from an advance fee justify the added cost for all products or just for some? Are there threshold impacts (tons, toxicity, hazardous) that would justify the added administrative cost?

Seattle may develop a strategic framework for product stewardship based on decisions around these choices.

### 3.2.5 GREEN JOBS

The recent recession has played a role in green jobs development. Because of the downturn, there is increased interest in creating these jobs. Building materials salvage and reuse is an area where SPU is already working with other agencies and businesses to find green jobs.

## 3.3 CURRENT PROGRAMS AND PRACTICES

The City of Seattle has five major areas of waste prevention programs:

- Reuse
- Sustainable building
- Organics
- Product stewardship
- Other waste prevention activities

The program areas are not always distinct. There is some overlap. For example, reuse includes diversion of salvageable building materials, which is also part of the green building program. These overlaps will be noted as needed.

### 3.3.1 REUSE

The State of Washington’s comprehensive solid waste plan, *Beyond Waste*, established “reduce, reuse, and recycle” as the fundamental principle of waste reduction for solid waste management. Along with messages about reducing consumption, SPU promotes reuse opportunities for households and businesses. For example, SPU often reminds customers to

donate rather than discard used clothing and household items, including electronics. The City of Seattle's own end-of-life policy for electronics mandates donation to schools wherever possible.

City agencies also model best practices with programs for reusing office supplies. Two programs, "Too Good to Toss" (building materials diversion at Seattle's two transfer stations) and market development for industrial byproducts, keep materials from entering the waste stream.

### **Transfer Stations "Too Good to Toss"**

"Too Good to Toss" diverts salvageable building materials, good furniture, and bicycles from loads going into Seattle transfer stations. It is by tonnage SPU's largest reuse activity. SPU began this program at the North Recycling and Disposal Station in 2008 and recovered about 100 tons that year. The program runs on weekends only. SPU expanded it in 2009 to the South Recycling and Disposal Station, though it's currently on hold pending the opening of the rebuilt South Transfer Station. The reusables collectors, all non-profits, provide the diversion service at no cost to SPU.

"Too Good to Toss" grew out of "Use-It-Again, Seattle" neighborhood-exchange events from 2003 to 2006. Those events involved direct costs and required sizable SPU staffing. SPU ended them, although six events in 2003 diverted an estimated 500 tons from disposal. SPU also found that these events provoked illegal dumping. Sometimes items from outside Seattle or the neighborhood were brought in. And some residents offered unwanted household goods for "free" at the curb, outside the program's limits.

### **Market Development for Reuse**

In 2008, SPU expanded its market development for business and industrial waste. That year, SPU joined and began providing financial support for By-Product Synergy Northwest. By-Product Synergy is an association of businesses supported by government and research institutions. It promotes the direct exchange between producers' byproducts and companies that can use them. The program aims to reduce waste and save money for participating manufacturers.

SPU has also partnered with King County in several market development efforts. Recently, funding has dropped for both agencies. However, King County Link-Up, a program to increase markets for recyclables, completed a test of recycled asphalt shingles put in asphalt paving mix. The testing proved to the paving industry that asphalt shingles can be recycled.

## **3.3.2 SUSTAINABLE BUILDING**

The City of Seattle's broad commitment to environmental sustainability includes strategies supporting greener building design, demolition, and construction. Some of these programs seek to increase waste prevention and recycling. Those focusing on waste prevention are described in this section. See Chapter 5, Other Seattle Solid Waste Programs, for detail on our programs to increase construction and demolition (C&D) waste recycling.

### **LEED Standards**

Since 2000, City of Seattle policy requires all new and remodeled city-owned buildings of more than 5,000 square feet to meet the LEED silver standard. LEED is the Leadership in Energy and Environmental Design rating system of the U.S. Green Building Council. Some Seattle buildings

have been awarded ratings above silver, either gold or platinum. The LEED system grants rating points for, among other things, recycling of demolition and building construction wastes.

By adopting the LEED standards for its own buildings, the city successfully set an example for private sector development. Seattle has now become a nationwide leader in the number of LEED buildings. By 2010, there were 74 LEED-rated new buildings in Seattle. Because of LEED requirements, in 2008 more than 16,000 tons of C&D wastes were diverted to recycling, according to an SPU consultant study. In the decade from 2000 to 2010, for 47 LEED buildings documented, the total exceeded 100,000 tons according to DPD data. SPU believes that construction to LEED standards also stimulates increased use of salvaged building materials and more efficient use of new materials, though results have not been quantified.

## **Green Building Team**

To promote LEED standards and other energy and material-conservation strategies by the building industry, the City of Seattle created a Green Building Team in 2000. Housed in DPD, the Green Building Team includes experts from SPU and Seattle City Light and is partly supported by those departments. SPU support, primarily from the water and solid waste business areas, has ranged from a high of about \$350,000 in 2006 to about \$200,000 in 2010. The team's programs include policy development, technical assistance, outreach, and marketing.

In addition to the Green Building Team, SPU has supported a variety of related programs and technical assistance projects. For example, through the Built Green industry organization, SPU offered grants to small multi-family residential builders who achieved high levels of recycling from their jobsites. Early planning is underway for deconstruction and salvage of materials for reuse from the Seattle Housing Authority Yesler Terrace redevelopment.

SPU's public information materials for contractors, produced jointly with King County and DPD, include waste reduction. The King County-Seattle Construction Recycling Directory, published regularly and online, provides worksheets and guidance on how contractors can best recycle and reuse building materials. Through DPD's Green Building Program, SPU also issued a series of remodel guides, including one for salvage and reuse. A series of case studies, on both city and private projects, highlights the costs and benefits of various sustainable building approaches. The studies are available to the public in pamphlet and electronic form.

## **Salvage and Deconstruction**

In the 2004 Plan Amendment, SPU promised to expand technical assistance for waste diversion. In 2007 and 2008, much of this was focused on diverting C&D waste from landfill and upgrading the outcomes for some materials from recycling to reuse. SPU pilot programs supported and gathered data on eight "deconstruction" projects to promote salvage of building materials.

### **Building Salvage/Deconstruction Pilot Projects**

Building salvage is an alternative to conventional demolition. With salvage, a structure is carefully taken apart, saving building elements for reuse. Commonly salvaged materials include structural beams and dimensional lumber, wood flooring, cabinetry, casework and doors, architectural details, brick and stone. Salvage operations can range from selective removal of high-value elements to full-scale deconstruction.

Building salvage can be an important additional service a demolition company can offer clients. More customers are becoming environmentally aware. They want waste

reduction on the jobsite and they use green building rating systems such as LEED and Built Green that call for waste reduction, salvage and recycling.

To evaluate the cost-effectiveness and waste diversion potential of differing salvage approaches, SPU and the Washington State Department of Ecology sponsored a series of salvage and deconstruction pilot projects. The results of the pilot projects provided detailed data on the costs and benefits of these approaches, including salvage, deconstruction and house moving. The studies showed that deconstruction increases waste diversion, especially salvage and reuse, compared to demolition or demolition with comingled recycling.

### **Deconstruction Permit Created and House Moving Promoted**

Following the guidance of the *Zero Waste Resolution*, SPU and DPD analyzed re-use and recycling opportunities in the C&D industries. An initial objective was promotion of increased building materials salvage and re-use opportunities.

Early in 2009, the City Council approved a DPD ordinance creating incentives for salvage and deconstruction in lieu of demolition for single-family buildings. The ordinance allows builders committed to salvage and recycling goals to begin deconstruction before a building permit is issued. That timing is in contrast to previous procedures by which the city issued demolition and building permits at the same time. The old procedure left no incentive for careful deconstruction of dwellings and salvage of reusable materials. In 2010, 10 builders used the deconstruction permit. This number is likely to rise when residential construction recovers from the recession.

SPU also conducted a study that identified barriers to house moving. The report suggested changes in city regulatory fees and practices to remove some of the barriers. A parallel study affirmed the value in waste and green house gas reduction when houses are moved rather than destroyed. Moving a single house can divert 40 to 80 tons from landfill, and Seattle expects to continue to promote house moving.

### **Hybrid Deconstruction Program**

Hybrid deconstruction is a technique between demolition and deconstruction. Typically, deconstruction is quite labor-intensive. In hybrid deconstruction, elements of the building are cut into panels and then disassembled quickly on the ground. Disassembly can occur at the jobsite or at a specialized yard called a *hybrid deconstruction center*. SPU obtained a 2009 Coordinated Prevention Grant from Ecology to develop a business case for a hybrid deconstruction center in the Seattle area. If a center were developed, it would further lower the cost of deconstruction relative to traditional demolition, and additionally, support green jobs training.

The study showed that such a development was high priced. Setting up a hybrid deconstruction center has become even less possible because of recession-caused drops in SPU funding. SPU plans to continue technical and policy support of existing salvage and deconstruction businesses.

In coming years, SPU's hybrid deconstruction program will include efforts to:

- encourage industry to develop a grading system to facilitate reuse of structural lumber

- promote building material reuse through diversion at SPU's north and south transfer stations
- publicize salvage, deconstruction and house moving policies
- develop a salvage and deconstruction curriculum in connection with green jobs programs

### 3.3.3 ORGANICS

Organic materials—food and yard waste—present a significant opportunity for waste reduction. SPU has conducted programs in three major areas to divert organics from the waste stream:

- Residential backyard composting (including grasscycling)
- Edible food recovery from grocery stores and restaurants for feeding programs
- "Lean Path" analysis of restaurant kitchen efficiency

After maximizing onsite waste reduction, SPU focuses on organics collection programs for composting instead of landfilling.

#### Residential Backyard Food and Yard Waste Composting

Several city activities encourage property owners to manage organic wastes onsite. These include support for the Natural Lawn and Garden Hotline operated by contractor Seattle Tilth Association. SPU also ran programs offering discount compost bins, and continues to offer education publications, and hands-on training for householders and landscape professionals. Some of these projects are partly supported by the Local Hazardous Waste Management Program, and partly funded by a Coordinated Prevention Grant from the Washington State Department of Ecology.

A Seattle and King County program, Northwest Natural Yard Days (NNYD), furthered the onsite organics management message, including grasscycling. NNYD was a partnership with retailers. It offered discounts or rebates on mulching mowers, soaker hoses and other conservation tools for home landscapes. Seattle also collected and recycled home gas mowers as part of the Mayor's Climate Change Initiative. Mower rebates ended in 2008 and NNYD ended in 2009 after 12 years of operation. However, even with reduced spending and modest outreach, SPU expects residents using natural yard techniques to keep up household organics waste reduction.

Backyard composting by Seattle households peaked between 2000 and 2005. It declined since then because of the City of Seattle's decision to permit vegetative food waste in residential yard waste bins starting 2005. A bigger change occurred at the end of March 2009. As part of the rollout of new collection contracts, SPU required all single-family accounts to have food and yard waste carts. At the same time, SPU added meat and dairy products to the list of products allowed in curbside food and yard waste bins.

SPU also increasingly encouraged residential customers to use curbside food waste service as part of its strategy to meet the Seattle's 60% recycling goal. As a result, the number of households backyard composting declined. In 2000, 46% did backyard composting of yard waste, then 40% in 2005 and down to 30% in 2010, according to a 2010 Home Organics Survey. Backyard composting of food waste showed a similar pattern, declining over the decade from

31% participation to 20%. Faced with this trend and other demands on solid waste revenues, in 2011 the utility ended subsidized sales of backyard compost bins and green cone composters.

## Edible Food Recovery

SPU added the Edible Food Recovery program in 2006. This program helps divert edible food from commercial food businesses to programs that feed the hungry, in two ways. First, food and hospitality industries are encouraged to donate surplus food to hunger-relief agencies. Second, SPU has assisted hunger-relief agencies with grants to fund refrigeration and other equipment (through 2010). The refrigeration equipment has enabled agencies to store perishables longer and thereby distribute more food before it spoils.

Between 2006 and 2010, SPU funded \$394,021 for 19 hunger agencies to buy equipment for safe transport, storage, and use of donated food (Table 3-2). Over a 10-year period, this investment should divert nearly 23,000 tons of edible food from the waste stream, at a cost of \$29 per ton. At a disposal cost of \$53 per ton, over 10 years the investments will yield about \$1,216,721 in savings from avoided disposal costs for the utility.

**Table 3-2**  
**SPU Food Recovery Investments 2006 – 2010**

| Year | Agency                          | Project                             | SPU investment | Projected 10-yr diversion (in tons) | Value of 10-yr diversion | SPU investment (per ton) |
|------|---------------------------------|-------------------------------------|----------------|-------------------------------------|--------------------------|--------------------------|
| 2006 | Food Lifeline                   | Walk-in refrig/freezer              | \$90,000       | 4,500                               | \$238,500                | \$20                     |
| 2007 | Food Lifeline                   | Shoreline facility retrofit         | \$75,000       | 4,400                               | \$233,200                | \$17                     |
| 2007 | Downtown Food Bank              | Refrig equipment                    | \$10,000       | 205                                 | \$10,865                 | \$49                     |
| 2008 | Ballard Food Bank               | Upgrade truck                       | \$9,908        | 275                                 | \$14,575                 | \$36                     |
| 2008 | Food Lifeline                   | Food recovery equip Seattle's Table | \$14,998       | NA                                  | NA                       | NA                       |
| 2008 | Food Lifeline                   | Waste prevention recycling grant    | \$14,159       | NA                                  | NA                       | NA                       |
| 2008 | Genesis House                   | Refrigerator and freezer            | \$6,057        | 76.5                                | \$4,055                  | \$79                     |
| 2008 | Hunger Intervention Program     | Refrig, freezer, food processing    | \$13,459       | 185                                 | \$9,805                  | \$73                     |
| 2008 | St Vincent de Paul              | Walk-in cooler                      | \$10,000       | 3,900                               | \$206,700                | \$3                      |
| 2008 | Union Gospel Mission            | Refrig box truck                    | \$25,000       | 1,438                               | \$76,214                 | \$17                     |
| 2009 | Beacon Ave food bank            | Food transport & distribution equip | \$1,553        | 90                                  | \$4,770                  | \$17                     |
| 2009 | Community lunch on Capitol Hill | Food storage & process equip        | \$10,000       | 274                                 | \$14,522                 | \$36                     |
| 2009 | Food bank of St Mary's          | Food recovery truck upgrade         | \$7,108        | 934                                 | \$49,502                 | \$8                      |
| 2009 | North Helpline                  | Refrig truck purchase               | \$16,500       | 1,292                               | \$68,476                 | \$13                     |
| 2009 | Pike Market Senior Center       | Refrig equip repair                 | \$10,049       | 269                                 | \$14,257                 | \$37                     |
| 2009 | St Vincent de Paul              | Refrig box truck                    | \$15,664       | 1,761                               | \$93,333                 | \$9                      |
| 2009 | Union Gospel Mission            | Commercial freezers                 | \$13,099       | 2,171                               | \$115,063                | \$6                      |
| 2010 | Bread of Life Mission           | Four freezers                       | \$15,078       | 288                                 | \$15,264                 | \$52                     |



| Year         | Agency                                      | Project                         | SPU investment   | Projected 10-yr diversion (in tons) | Value of 10-yr diversion | SPU investment (per ton) |
|--------------|---------------------------------------------|---------------------------------|------------------|-------------------------------------|--------------------------|--------------------------|
| 2010         | Immanuel Community Services                 | Kitchen equipment upgrade       | \$3,710          | 122                                 | \$6,466                  | \$30                     |
| 2010         | Puget Sound Labor Agency                    | Refrigerator & coolers          | \$3,586          | 95                                  | \$5,035                  | \$38                     |
| 2010         | Rainier Valley Food Bank                    | Elec pallet jack & refrigerator | \$6,583          | 151                                 | \$8,003                  | \$44                     |
| 2010         | University District Food Bank               | Freezer & elec scale            | \$2,910          | 130                                 | \$6,890                  | \$22                     |
| 2010         | Volunteers of America - Greenwood Food Bank | Refrigerated food recovery van  | \$19,600         | 400                                 | \$21,200                 | \$49                     |
| <b>Total</b> |                                             |                                 | <b>\$394,021</b> | <b>22,957</b>                       | <b>\$1,216,695</b>       | <b>\$29</b>              |

SPU has also subsidized compostable organics collection costs for these agencies and others. The subsidies helped the agencies cover costs as they switched from garbage collection only, to both garbage and compost collection. When the switch is complete, agencies save money.

The Edible Food Recovery Program is expected to remain extremely important during the economic recession and on into the first years of the period covered by this Plan.

### Restaurant and Institutional Kitchen Efficiency

Lean Path, a proprietary kitchen food waste management system, became part of SPU's Onsite Organics program. Lean Path provides technical assistance to commercial kitchens to reduce waste through more efficient food purchasing and preparation.

Under SPU's direction, a consultant recruited and trained three institutional kitchens from 2008 through 2010: Seattle University and Swedish and Northwest hospitals. The three kitchens prevented a yearly combined total of almost 32 tons of food waste, by more closely matching purchases to food actually used. The three sites continue to use this strategy. SPU is interested in promoting this service to restaurants in connection with expanded compost collection. Expanding the program depends on SPU funding.

### Single-Use Food Service Packaging

The 2007 *Zero Waste Resolution* instructed SPU to study banning plastic shopping bags and expanded polystyrene (EPS, sometimes called Styrofoam) food service ware. Following a detailed study, Ordinance 122751 banned the use of EPS food service containers, cups, and plates in Seattle. The ban took effect January 1, 2009.

With the ban in place, SPU and its partner Cedar Grove Composting strongly encouraged restaurants to switch to compostable food service products rather than to other plastics. These changes focused restaurant-industry attention on the need for and benefits of commercial food waste collection.

In 2010, SPU performed broad stakeholder outreach and public education to help food businesses meet the second requirement of Ordinance 122751. The ordinance requires all food service businesses to replace one-time-use (throwaway) food service ware and packaging with

compostable or recyclable food-ware. With compostable products, people can put leftover food, still in the product, straight into an organics bin, rather than a garbage bin.

SPU estimates that using compostable food service ware at Seattle quick-serve restaurants will divert 6,000 tons of waste per year from the landfill, including 4,500 tons of leftover food. This figure does not include kitchen wastes or leftover food collected for composting from full-service restaurants.

The program to encourage compostable one-time use products has SPU working with partners to sign up restaurants for food waste compost pickup. By mid-2011, about 2,000 Seattle restaurants were using composting pickup services.

### 3.3.4 PRODUCT STEWARDSHIP

The City of Seattle supports a product stewardship approach to product end-of-life management. It does so through the Northwest Product Stewardship Council, and through its own studies, legislation, and support for state legislation.

#### Northwest Product Stewardship Council

SPU is a partner of the Northwest Product Stewardship Council (NWPSC), a coalition of government organizations in Washington and Oregon. The Council is comprised of a 15 member Steering Committee that works with Associate Members to promote product stewardship programs and policies. NWPSC sets regional goals for managing problem materials such as mercury thermostats, paint, fluorescent lighting, chemicals, pharmaceuticals, and electronics. The City of Seattle serves on the NWPSC steering committee. In the past 5 years, NWPSC has done the following:

##### Legislation

- In 2007, NWPSC members supported passage of the Washington State electronics recycling legislation that created the manufacturer-financed E-Cycle Washington program that offers recycling of computers, monitors, laptops, “tablets,” and TVs at no charge to Washington residents, schools, small businesses and non-profit organizations.
- In 2010, NWPSC members supported passage of legislation requiring producers of mercury-containing lighting products to pay for their end-of-life collection and recycling beginning in 2013
- In 2009, 2010, 2011, and 2012 NWPSC members pursued producer responsibility legislation for unwanted leftover medicines (Secure Medicine Return Bill)

##### Education

- Developed professionally-narrated PowerPoint to inform other agencies and public about product stewardship
- Hosted 2009 national conference of Product Stewardship Institute (PSI) jointly with the North American Hazardous Materials Management Association regional conference in Seattle

- Supported and participated in PSI national dialogues with producers seeking product stewardship (Extended Producer Responsibility or EPR) for mercury-containing lighting products, phone books, and paint
- In 2011, organized a conference on “Product Stewardship Strategies for Local Governments” attended by more than 100 agency and industry professionals

### Program Support

- Launched and supported growth of the *Take-It-Back* Network of retailers who, for a fee, take back various electronic products and mercury-containing lighting products
- As a test for secure medicine return, participated in a take-back pilot program in 2006-2011. The *Pharmaceuticals: A Return Mechanism* (PH:ARM) pilot program collected unwanted pharmaceuticals in secure return containers at Bartell's and Group Health pharmacies in several counties beginning in 2007 (Table 3-3.)

**Table 3-3  
Pharmaceuticals: A Return Mechanism Pilot Program  
Pounds Disposed 2007 - 2009**

| Year         | Group Health | Bartell Drugs | Total Pounds |
|--------------|--------------|---------------|--------------|
| <b>2007</b>  | 4,226        |               | 4,226        |
| <b>2008</b>  | 12,432       | 764           | 13,196       |
| <b>2009</b>  | 14,206       | 3,871         | 18,077       |
| <b>Total</b> | 30,864       | 4,635         | 35,499       |

### Current Initiatives

SPU's commitment to product stewardship has grown since 2004. During 2009, 2010, and 2011 legislative sessions, we worked with the City of Seattle’s Office of Intergovernmental Relations to support a proposed Secure Medicine Return Bill, and a successful bill for Recycling Mercury-Containing Lights (ESSB 5543).

SPU continues to be active on NWPSC committees developing product stewardship legislation for paint, carpet, batteries and various types of packaging. SPU also maintains membership in the Product Stewardship Institute, a national advocacy organization. Through PSI, we participate in national policy dialogues with industry. Current dialogues seek to establish end-of-life responsibility for unused architectural paint and phone books.

### Consumer Product Regulations

Recently, SPU has focused its waste prevention activities on consumer product initiatives.

#### Disposable Bags

Following approval of the *Zero Waste Resolution* in July 2007, SPU did an in-depth study of bans or other regulation for disposable shopping bags, and disposable food service ware. The study led the city to propose an advance recovery fee, or “Green Fee,” on disposable shopping bags. The Green Fee was to be charged on bags—both plastic and paper—from grocery, convenience, or drug stores. A voter initiative removed the City Council ordinance imposing the Green Fee. In 2011, the council returned to the issue, banning single-use plastic carry-out bags and requiring a 5-cent fee be charged for large paper bags.

## Food Service Ware

The same study suggested a ban on EPS food service ware of all kinds, which the City Council enacted in July 2008. That ban took effect January 1, 2009. Following the ban, substitute materials of all kinds were permitted until July 1, 2010, at which time the ordinance required Seattle food service business to use either compostable or recyclable products for all one-time-use food service ware and packaging. These “quick serve” businesses range from taco trucks to hospital cafeterias. Promoting, facilitating, and educating the public about this changeover has been a major part of Waste Prevention work in 2010 and 2011. SPU expects a nearly equal effort for several more years. See this chapter’s discussion of [single-use food service](#) packaging.

Seattle’s requirement that all single-use food service products be compostable or recyclable has had a dramatic effect on the food service packaging industry. The number of compostable products available to restaurants leaped from 70 to more than 700 in barely 2 years. The city expects that with full implementation by the end of 2012, the food service packaging regulations will divert 6,000 tons of packaging and leftover food from landfill.

## Junk Mail and Yellow Pages Phone Books

Following City Council instruction, SPU looked into the problems of unwanted advertising (junk) mail and unwanted yellow pages phone books in 2010. Phone book companies often deliver yellow pages books to homes and businesses who do not want them. This work led the City Council to pass Ordinance 123427 in October 2010, authorizing SPU to set up a yellow pages opt-out registry. The registry would track incorrect deliveries. The ordinance levied a per-book charge on publishers’ deliveries to reimburse SPU costs for running the registry. There was also a tonnage charge on yellow pages books to compensate SPU and, indirectly, ratepayers, for the costs of recycling and disposal.

Subsequently, yellow pages publishers sued the City of Seattle to overturn the ordinance and the City Council repealed the tonnage charge in the face of that suit. Court action on the legality of the opt-out registry fee was pending in spring of 2012.

Nevertheless, SPU engaged a contractor to manage the online yellow pages opt-out registry, and to offer a separate junk mail opt-out service linked from SPU’s website. The yellow pages phone book and junk mail services both launched in May 2011. Yellow pages phone books opt-outs quickly soared to an annual rate of 300 tons of paper saved. At the same time, a federal judge denied yellow pages publishers’ requests for injunctions to stop the yellow pages opt-out service. Since the junk mail service was not part of the lawsuit it will continue regardless of the court’s decision on yellow pages. From the junk mail opt-out service, SPU expects to obtain data on the number of opt-out requests and the amount of paper saved.

## Additional Product Studies

SPU also studied eight other problem products. The products were selected because they are recyclable materials appearing in relatively large volumes in the waste stream. Or they are toxic to some degree, making them difficult to recycle. The aim of the study was to determine strategies for increased recycling of these products. The products included carpet, plastic film from commercial sources, treated wood, mercury-containing lighting products, medical sharps, non-automotive batteries, expanded polystyrene block foam and textiles. The study focused on market development and product stewardship opportunities. Further study of additional problem products depends on the growth of solid waste funding.

The eight products already studied (Phase I) and the approximate order of further study and action are shown in Table 3-4.

**Table 3-4  
Planned Evaluation Schedule for Problem Products and Packaging in Seattle**

| Product or Packaging                   | Disposed 2004<br>(tons estimate)            | Possible Action                          |                                                                     |
|----------------------------------------|---------------------------------------------|------------------------------------------|---------------------------------------------------------------------|
| <b>Phase I (Current Study)</b>         | Treated wood waste                          | 13,600                                   | No change                                                           |
|                                        | Medical sharps                              |                                          | Possible state legislation                                          |
|                                        | Carpet                                      | 14,000                                   | Possible state legislation; local take-back established             |
|                                        | Plastic film (commercial applications)      | 16,000                                   | Collection program end 2011                                         |
|                                        | Fluorescent lamps                           | 50                                       | State action in 2010                                                |
|                                        | EPS block foam and void fill packaging      | 1,100                                    | Possible program 2012                                               |
|                                        | Batteries                                   | 200                                      | No action                                                           |
|                                        | Textiles                                    | 7,600                                    | No action                                                           |
| <b>Phase II</b>                        | PVC clamshell/blister packaging (non-food)  | 400                                      | No action; see NWPSC packaging report 2011                          |
|                                        | Single-use plastic beverage containers      | 1,600                                    | Covered in NWPSC packaging report 2011                              |
|                                        | Paint (oil-based & latex) and aero cans     | (paint) 660<br>(aero cans) 420           | Awaiting state legislation planned for 2012                         |
|                                        | Telephone books (yellow pages)              | 260                                      | Opt-Out Registry approved 2010; recovery fee proposed, then dropped |
|                                        | Plastic film (consumer packaging)           | 4,650                                    | Covered in NWPSC packaging report 2011                              |
| <b>Phase III</b>                       | Tires                                       | 210                                      | No action                                                           |
|                                        | Small appliances                            | 1,125                                    | No action                                                           |
|                                        | Plastic food packaging & Other plastics     | 20,000<br>(excludes bottles, jars, film) | Single-use food packaging regulated in 2010                         |
|                                        | Household metals                            | 5,500                                    | Most in curbside 2009                                               |
| <b>Continue under Existing Efforts</b> | General purpose polystyrene food containers | 120                                      | Banned 2009                                                         |
|                                        | Paperboard<br>Corrugated cardboard (OCC)    | 21,500                                   | Continue existing efforts                                           |
|                                        | Pallets/crates - "urban wood"               | 37,000<br>(excludes treated wood)        |                                                                     |
|                                        | Pesticides and fertilizers                  | 100                                      |                                                                     |
|                                        | Spent antifreeze                            |                                          |                                                                     |
|                                        | Household cleaning agents                   | 230                                      |                                                                     |
|                                        | Mercury-containing equip & thermostats      |                                          | Work through NWPSC for state action                                 |

| Product or Packaging                  | Disposed 2004<br>(tons estimate) | Possible Action                                                   |
|---------------------------------------|----------------------------------|-------------------------------------------------------------------|
| Products containing bisphenol A (BPA) |                                  | Likely to require state action                                    |
| Products containing phthalates        |                                  |                                                                   |
| Lead in jewelry & children's products |                                  |                                                                   |
| Brominated fire retardants            |                                  |                                                                   |
| Metals in product packaging           |                                  |                                                                   |
| Pharmaceutical waste                  |                                  | Secure Medicine Return Bill 2008-2012                             |
| Radioactive devices                   |                                  | Likely to require state action                                    |
| Cellular phones                       |                                  | Through NWPSC add to Electronic Product Recycling Law as possible |
| Computers and computer monitors       | 1,300                            | Continue current programs                                         |
| VCRs, stereos, televisions            | 2,600                            | Add to Electronic Product Recycling Law where needed              |
| Major appliances                      |                                  |                                                                   |
| Used motor oil                        | (includes diesel) 52             | Motor oil added to curbside in 2009                               |
| Lead-acid automotive batteries        | 130                              | Support current take-back system                                  |

EPS = expanded polystyrene; OCC = old corrugated cardboard; PVC = polyvinyl chloride  
Source: "Revised 60% Projections, March 24, 2006 Update," SPU staff

## E-Cycle Washington

The statewide E-Cycle Washington product stewardship program began in 2007. SPU signed up with the operating agency, the Washington Materials Management and Financing Authority, as a collector. SPU offers curbside collection of the five products covered by the E-Cycle Washington program (computers and laptops, monitors, tablets, and TV sets) and other electronic products for \$20 per pickup. Customers call in to arrange collection.

E-Cycle Washington's convenient drop-off sites throughout the city explain why SPU's electronic waste curbside service received little use (approximately 1,000 calls per year) in 2009 and 2010.

All electronics collected at curbside or otherwise entering the city's MSW system are delivered for processing to facilities that meet or exceed the standards of the Basel Action Network (BAN) Electronics Recyclers Pledge of True Stewardship and Washington Department of Ecology's Environmentally Sound Management and Performance Standards for Direct Processors. The City Council is considering upgrading to the more rigorous BAN e-Stewards standards in the near future.

The City of Seattle donates its own surplussed workable computers as needed to Seattle Public Schools and other non-profits, with the remainder sold to the public. In 2010, almost 90% of more than 2,000 surplussed computers were donated. Unworkable electronics products are disposed under a contract requiring the company to meet either BAN standards or a similar declaration acceptable to the state.

### 3.3.5 OTHER WASTE PREVENTION ACTIVITIES

Waste prevention strategies are typically determined by the products or materials targeted. For example, office paper, which is easily recycled, is often carelessly overused. Carpet, which contains high-value plastic fibers, is heavy to ship and reprocessing plants are thousands of

miles away. For these and other products, such varying barriers to effective recycling lead to different strategies, a number of which are noted here.

## Market Development

A major program within waste prevention is market development for typically hard-to-recycle materials. Currently, chief among those products is carpet. SPU staff work has greatly increased the likelihood that new carpet recovery facilities will locate in the Seattle area. With King County, SPU has supported research leading to the use of recycled asphalt shingles in hot mix asphalt. Work is under way with private-sector haulers to collect plastic film from commercial and industrial sources. Two other products are under consideration: gypsum wallboard and urban wood chips for pulp. However, action on these products needs to wait on the availability of funding.

## Green Purchasing

“Green purchasing” approaches reduce the environmental impact of the whole range of products and materials purchased by the City of Seattle. City purchasing incorporates requirements based on Seattle Municipal Code to buy products with recycled content, that are less toxic, and that are recyclable and re-usable. [Green purchasing policies and ordinances](#), including SMC 20.60.200, are available online.

Future green purchasing will emphasize two things: less packaging and aggressive controls on purchased chemicals. Less packaging prevents waste, and lower levels or absence of toxic chemicals will reduce exposures for staff and visitors to city facilities.

## Paper Cuts

The Paper Cuts program was created in 2004 to show that the City of Seattle could walk its talk on waste reduction. At the end of 2009, this program came to a close with institutional changes solidly in place and a 28% overall reduction in reams of office paper purchased. Over the 5 years of this campaign, the city saved nearly 150,000 reams of paper, weighing nearly 350 tons (400 reams =1 ton). In 2009, this reduction saved \$44,000 in paper purchasing costs.

In addition, current customer enrollment in SPU’s paperless billing will save 524,880 sheets of paper and 349,920 envelopes each year, an amount equal to 4.4 tons of paper and 112 trees.

## Waste Prevention and Recycling Matching Grants

In 2008, the City of Seattle established the Waste Prevention and Recycling Matching Fund, a community grant program. This program was another action called for by the Zero Waste Resolution. The purpose of the program is to support projects initiated by the community. The projects were to prevent waste generation, increase reuse, and increase recycling and composting. Data collected from the projects are used to develop effective models and strategies to share with residents and businesses.

In 2008 and 2009, the matching fund program received 50 applications requesting about \$900,000 in all. SPU awarded \$200,000 in matching funds to 17 projects. The projects included food recovery, school composting and recycling, commercial waste reduction, materials reuse, multi-family composting and recycling, and sustainable landscaping.

Exceeding expectations, the matching fund projects diverted more than 1,900 tons of waste and educated nearly 10,000 people about waste prevention, recycling and composting.

SPU was unable to fund the Waste Prevention and Recycling Matching Fund in 2010. The program was restored for 2011 with a focus on schools. Meanwhile, knowledge gained from 2008 to 2009 guided three other SPU programs in 2010:

1. **Increased Composting and Recycling in Schools.** Public and private school interest in the grant program convinced SPU to offer small grants from a \$20,000 budget to maintain program momentum. This expanded dramatically thanks to restoration of the full \$100,000 for grants in 2011. The schools requested help starting programs to separate lunchroom compostables (food waste and compostable food service packaging) for organics collection. As a result, the matching grant program for 2011 and 2012 was redesigned to provide significant assistance to Seattle Public Schools, in hopes such programs could be jump-started throughout the district.
2. **Outreach to Immigrant Communities.** SPU will continue partnering with community-based organizations to expand waste prevention and recycling outreach to immigrant and refugee businesses.
3. **Food Recovery.** Significant interest in food recovery will continue to be served through the Food Recovery Infrastructure Grants Program. This program previously ran concurrently with the Waste Prevention and Recycling Matching Fund.

#### Community Benefits from 2008 – 2009 Grants

- Involved over 500 volunteers who contributed more than 2,500 hours to grant projects
- Offered low or no-cost resources to low-income communities, including computers, bikes and up to 222 tons of food
- Created 6 new temporary positions funded by the grant
- Provided green job skills training for youth and low-income community members
- Provided service equity to immigrant, refugee and low-income communities
- Helped youth develop leadership skills
- Built and strengthened community networks

## Outreach to Businesses

Reaching businesses with resource conservation and waste prevention programs has always been more difficult than communication with residents. For residents, the goal is usually modest and uniform behavior changes spread across a large population. And it's easier to reach the person in charge of waste management in the home. In contrast, increasing conservation, waste prevention and recycling in the commercial sector often requires a much greater level of contact, information and persistence. The payoff can be large, but often business processes—and sometimes just habits—must be changed.

For the past 15 years, SPU has used a contractor to provide the Resource Venture program. Resource Venture services include technical assistance and promoting resource conservation in the commercial sector. The consultant approach allowed focus to vary over time and include a



full range of SPU line-of-business outreach goals. Resource Venture services provide businesses with a range of suggestions from water conservation and office paper recycling and two-sided printing to green purchasing. Recently, Resource Venture has worked with quick-serve restaurants, to promote compostable food service ware as a replacement for one-time-use, throwaway products.

## 3.4 ALTERNATIVES AND RECOMMENDATIONS

SPU plays a vital role in reducing the city's impact and moving the community toward sustainability. In that context, waste prevention will continue to play a key role. Actions that SPU will take are described here.

### 3.4.1 REUSE

SPU will continue to expand broad-themed public education about product and materials reuse and implement programs to remove barriers to those activities. The city has taken a programmatic interest in several areas of materials reuse:

- Transfer station waste prevention
- Charitable donations
- Industrial materials reuse
- Electronic products reuse and expansion of covered products in the E-Cycle Washington program
- Building deconstruction and salvage

### Transfer Station Waste Prevention “Too Good To Toss”

SPU will continue diverting materials for reuse at the transfer stations. Private contractors could continue to provide this service, or city transfer station staff could take it over. Pre-scale drop boxes maintained by various charities can also be part of the program. To increase building material salvage and recycling, loads of C&D wastes can be redirected to approved processing facilities.

#### Recommendations

- Continue, at least until the rebuilt transfer stations come on line, using contractors to divert reusable building materials and household items (such as furniture in good condition) from residents bringing loads to the transfer stations.
- Encourage charities to locate drop boxes or maintain open drop-off trailers either onsite (Bike Works) or nearby, as has been done over the past several years
- Develop educational materials for contractors now bringing C&D loads to Seattle’s north and south transfer stations. The education pieces will direct them to source-separated drop-off services as well as processors of C&D loads of mixed recyclables. See Chapter 5, Other Seattle Waste Programs, section 5.1 for more detail on C&D.

These transfer facility recommendations are also briefly referenced in Chapter 4, Seattle's MSW System, section 4.4.4.

## Charitable Donations

The recession continuing into 2011 has spotlighted the need for low-cost household goods and clothing. Increasing diversion of usable items will reduce waste as well as help fill that need.

### Recommendations

- Collaborate with charities and others to continue to find ways to divert usable items and materials before they are dumped at SPU transfer stations
- Continue to support City of Seattle policies requiring donations of usable electronic equipment to schools
- Promote private donation of electronic products to organizations that refurbish them for reuse

## Industrial Materials Reuse

Some byproduct exchanges are easy to put in place. Others require some level of processing to create salable commodities. SPU can find ways to stimulate such exchanges and encourage market development for various commodities.

### Recommendation

- Continue involvement and support for industrial commodity exchange programs, focusing on market development for recycled commodities as needed

## Electronic Products Reuse, Expansion of Covered Products

SPU actions range from support of the E-Cycle Washington program, to efforts through the Northwest Product Stewardship Council (NWPSC) to expand the law's coverage to other electronic products, and to ensuring the highest standards for electronics disposal.

### Recommendations

- Continue to promote donation of these and other electronic products to companies that can make sure they are operable. Such companies then resell them to the public or donate them to schools and others through appropriate non-profit organizations.
- Work with the NWPSC and the City of Seattle's Office of Intergovernmental Relations to expand the Electronic Product Recycling Law to cover more types of products such as printers, other computer peripherals, compact disc players, and the like.
- Continue to ensure that electronics disposal meets or exceeds the standards of the Basel Action Network (BAN) Electronics Recycler's Pledge of True Stewardship, Washington Department of Ecology's Environmentally Sound Management and performance Standards for Direct Processors, and the upgraded BAN e-Stewards standards as may be adopted by the Seattle City Council in the near future.

- Upgrade the electronics disposal standards in Seattle’s surplus electronics contract to the new BAN e-Stewards standards when the city renews the contract in 2014.

### 3.4.2 SUSTAINABLE BUILDING

Seattle's Sustainable Building Policy is an integral part of the city's move toward sustainability. As time goes on, LEED and similar national standards are likely to become increasingly specific, encouraging more waste prevention and recycling. DPD is a vital partner in furthering sustainable building practices.

#### Recommendation

- Continue to work with the DPD to maximize reuse of materials and recycling of wastes, including new regulations mandating recycling of most C&D-generated materials

See Chapter 5, Other Seattle Solid Waste Programs, for detail on C&D wastes.

### Building Deconstruction and Salvage

Recommendations for building deconstruction and salvage build on and augment past activities.

#### Recommendations

- Continue to support changes in City of Seattle building codes that provide incentives for salvage and deconstruction. Continue to support U.S. Green Building Council (LEED) and other standards that emphasize the reuse of materials
- Promote grading standards development for salvaged structural (dimension) lumber in order to expand the market for it (the highest value material salvageable from building deconstruction per SPU's 2010 Hybrid Deconstruction Center study). The lack of a grading system accepted by state and local building codes is the critical barrier to increasing reuse of structural lumber. A market for salvaged dimension lumber will increase revenue from deconstruction and stimulate owner and contractor participation and, thereby, total tons salvaged. Further, because the market for architectural elements can be influenced by trends in architectural style and likely is limited, marketing salvaged dimension lumber is the growth area for building salvage.
- Promote house moving. House moving is the ultimate reuse since the home remains almost entirely as is. During the period of this plan, SPU will continue to aggressively promote house moving and work with other city agencies to remove permit barriers to this activity.

### 3.4.3 ORGANICS

Several onsite organics programs have reached maturity. Diversion resulting from these programs is flat or declining. In the next 5-year period, SPU expects the trend to continue.

## Residential Backyard Food and Yard Waste Composting

Even though residential organics service and use has increased, onsite organics management is still the preferred way to manage these materials.

### Recommendations

- Continue to promote backyard composting of food scraps and landscape waste
- Continue to promote grasscycling. Grasscycling retains valuable nutrients on lawns and helps build soil. Healthy lawns and soils enhance stormwater retention and reduce irrigation. Grasscycling also reduces hauling of heavy green organics, and reduces seasonal overloading of compost facilities with wet, high-nitrogen clippings. Overloading with grass clippings can promote anaerobic breakdown and result in odor problems at composting facilities.

## Edible Food Recovery

When grocery stores and restaurants donate food to feeding programs, they reduce waste. Even less food is wasted when food banks and feeding organizations operate more efficiently (thanks to expanded refrigeration). And when these agencies also shift from garbage disposal to compost collection, they increase organics diversion from landfill.

### Recommendations

- Continue promoting retail and restaurant donations to food banks and feeding programs
- Continue working with food banks to minimize their disposal costs through shifts from garbage to compost pickups

## Restaurant and Institutional Kitchen Efficiency

Greater efficiency in food purchasing and preparation can lead to less food waste for Seattle and less cost to businesses. See the [Lean Path program](#) description in section 3.3.2.

### Recommendations

- Continue promoting food purchasing and preparation efficiency as a complement to programs designed to increase commercial food waste composting
- Offer consulting services to help restaurants and institutional kitchens buy and serve food with less waste as funding permits

## Single-Use Food Service Ware Regulation

The overall goal of this program is to reduce, if not entirely remove, restaurant-generated organic materials from landfill disposal, thus reducing waste and green house gas generation.

### Recommendations

- Continue to press the quick-serve restaurant industry, food courts, and institutional food service businesses (such as hospitals and schools) to use primarily compostable single-use food service products

- Work to ensure that proper containers are used in public areas of quick-serve restaurants and other food service businesses where single-use service ware is discarded
- Work with food service businesses to ensure that they have collection contracts so materials are picked up and sent for proper processing
- Provide extensive public education to support these programs
- Fund sufficient outreach staff or consultant services to promote continued and growing compliance with the single-use food packaging regulations

### 3.4.4 PRODUCT STEWARDSHIP

Product stewardship recommendations target areas where the city can act on its own, regionally or through state legislation to obtain producer responsibility for source reduction (redesign), reuse, and recycling—including design for recycling—of various products. The alternatives facing SPU in product stewardship involve two decisions. First is which product to focus on. Second is whether the effort should be statewide, regional, or endeavors Seattle undertakes as a leader in the field.

SPU should encourage and act to guide consumer choices and redesign of products that minimize waste and associated environmental impacts, moving toward a City of Seattle solid waste system that:

1. Shifts as much solid waste system cost as practicable from city rates to product cost-internalized systems or recovery fees paid by product producers
2. Charges consumers upfront (internalized in the cost of products) for disposal of certain products that either contribute significant tons to the city's solid waste system or cause environmental problems during disposal
3. Encourages continuation and expansion of producer take-back services for problem products (such as electronics) that are handled primarily outside of the city system
4. Continues to provide services and set rates to encourage customers to minimize garbage and reduce use of products that end up as solid waste

#### Recommendations

- Develop a strategic framework for product stewardship actions. Define what Seattle can accomplish acting either alone or in partnership with other local jurisdictions. Define which products and materials can only be successfully regulated through state legislation.
- Continue work with Northwest Product Stewardship Council (NWPSC), Local Hazardous Waste Management Program, and others to increase the range and effectiveness of product stewardship at the state level
- Continue support for proposed state legislation regarding return of unwanted, leftover pharmaceuticals, medical sharps and carpet

- Monitor and support the development of plans for producer-paid end-of-life management for mercury-containing lighting products resulting from 2010 state legislation
- Work with partners to determine the best strategies and timing for new state legislation covering products such as latex and oil-based paint
- Support the NWPSC dialog regarding product stewardship for packaging and printed paper
- Support expanding the Electronic Product Recycling Law to include a greater variety of electronic products
- Continue support for the Product Stewardship Institute and the national product dialogs the institute supports
- Pursue local legislation (which may include retail take-back) where regional or state action is not forthcoming. Examples of products that may be regulated or have been regulated locally include single-use food service ware, shopping bags, and yellow pages phone books
- Stay abreast of national developments as product stewardship moves from management of products notable for their toxic content (electronics, mercury-containing lighting, pharmaceuticals) toward producer responsibility for many of the products and types of materials such as packaging found in Seattle’s curbside collection program
- Continue attention to material reuse and recovery rates under product stewardship programs and evaluate support for future programs based at least in part on their recovery rates compared to existing programs such as curbside
- Emphasize the economic development (job creation) potential of product stewardship programs

### **3.4.5 OTHER WASTE PREVENTION ACTIVITIES**

Many waste prevention strategies can be applied directly to existing day-to-day activities of businesses, public agencies and individuals. Expansion of these programs will require steady work and public education over the long run.

#### **Green Purchasing**

City of Seattle purchasing guidelines call for the use of green products and practices. In the future, purchasing professionals should provide a Green Knowledge Bank for other purchasing agents, leading to inter-agency collaboration on green purchasing solicitations.

#### **Recommendations**

- Push City of Seattle departments toward additional green purchasing decisions in facilities construction
- Work for guidelines requiring more recycling and recycled-content provisions in “standard” specifications for all work in the public rights-of-way

- Seek packaging-waste reduction and more aggressive controls on chemicals acquisition to reduce toxics exposures for staff and visitors to city facilities
- Contribute to standards setting for “ecolabels” and suppliers—from green office supplies to green fleets
- Incorporate end-of-life management and product stewardship into purchasing
- See that Seattle continues its role as a resource for both businesses that are utility customers and other government agencies

## **Paper Cuts**

Office paper use reduction is well established in City of Seattle government. Opportunities exist to make this a model program that private businesses of all sizes can use.

### **Recommendation**

- Continue to include Paper Cuts as a part of outreach to businesses whenever possible

## **Waste Prevention and Recycling Matching Grants**

This program has proved to be very attractive to schools, both public and private. The [program’s success](#) is described in this chapter.

### **Recommendation**

- For the first part of the plan period, focus grant monies on schools, working with school district administration and private school management, to establish system-wide approaches to school food and yard waste collection.

By mid-2013, SPU expects nearly all public and private schools in Seattle will have recycling and compost diversion programs and collection services. At that point, the grant program can expand to other types of generators and community programs.

## **Junk Mail, Catalogs and Phone Books**

A variety of regulatory and program options are available to reduce the tonnage of junk mail, catalogs and unwanted phone books.

### **Recommendations**

- Continue the online junk mail opt-out service established in early 2011. The service will sustain a single, visible link from City of Seattle web pages that residents and businesses can use at no cost to opt-out of junk and catalog mail, possibly including yellow pages phone books. Monitor service provider estimates of tonnage of paper saved based on the number of opt-outs made and report to the City Council.
- Given a favorable decision in the yellow pages publishers' lawsuit seeking to block the Phone Books Opt-Out Registry, strongly promote this service as a way to quickly reduce paper use.
- SPU will work with the phone companies and phone book publishers to change Washington Utilities Commission regulations that require delivery of white pages

phone books. Much less paper would be used if the books were only printed for those who affirm that they need them.

## 3.5 MEASUREMENT

Measuring waste prevention is often difficult or impossible because data on what does not happen are frequently not available. This is particularly true when residents and businesses, responding to SPU messages, stop or reduce purchases. “Waste Free Holidays” where SPU and King County have combined to suggest that gifts be activities instead of “stuff” is a typical example. How much is not purchased and the amount of wrapping and packaging not generated cannot be determined. Wherever possible, however, SPU seeks to quantify results. The areas where data can be obtained are detailed below.

### 3.5.1 REUSE

SPU’s disparate reuse programs require measurement methods tailored to the needs of the programs and their various materials.

#### Transfer Station Diversion

As a condition of their contracts or memoranda of agreement (MOAs), SPU collects data from the companies diverting building materials and useable household goods from the vehicles entering the north and south transfer stations.

#### Industrial Materials Reuse

SPU has not been able to measure industrial materials reuse in the past. Participating with By-Product Synergy Northwest and other agencies, SPU will work to collect data about industrial materials reuse, including such sources as the IMEX online materials exchange program.

#### Electronic Products Recycling and Reuse

E-Cycle Washington provides statewide data on electronics recycling broken down by county. SPU receives these reports and can estimate the volume of Seattle-origin diversion. The city will continue to promote both reuse of still-workable products and proper disposal at end-of-life.

### 3.5.2 SUSTAINABLE BUILDING

Waste prevention sustainable building activities center around building deconstruction and salvage, to increase C&D reuse and recycling. SPU plans to track data from:

- DPD deconstruction permits
- Salvage tonnage reported as recycling by company members of the Northwest Building Salvage Network and similar businesses
- Number of houses moved in the city annually

### 3.5.3 ORGANICS

SPU measures organics management at Seattle’s homes indirectly through surveys. Data collection can be built into commercial kitchen programs.



## Residential Backyard Composting and Grasscycling

Estimates can be generated for backyard food and yard waste composting and grasscycling from data on the number of participating households. These data are obtained by survey every 5 years.

## Restaurant and Institutional Kitchen Efficiency

Waste reduction data from this source are dependent on SPU contracting with an organization such as Lean Path. Lean Path assists food service businesses in cost-reduction through purchasing and food-portion management. If funds are available, SPU plans to provide this kind of technical assistance again.

## Single-Use Food Packaging Regulation

For compostable or recyclable single-use food service packaging, SPU will develop methods to estimate progress. It is very difficult to obtain data from all the city's food service businesses as to how many are using what types of food packaging.

It is very difficult to separate the effect of organics outreach to the commercial sector related to food packaging regulation. The amount of material diverted is not separately measured. In these cases, it appears in aggregate reports from collectors and the city's compost processor.

### 3.5.4 PRODUCT STEWARDSHIP

Once established, product stewardship programs provide excellent data on the amount of recycling that occurs, a measure of diversion, not prevention. SPU will collect data on recycling of products that fall under product stewardship regulatory legislation. It is not possible to predict which products will be recycled thanks to future product stewardship legislation, but here are some examples:

- Electronic products
- Pharmaceuticals (currently a pilot program)
- Mercury-containing lighting
- Carpet
- Paint
- Medical sharps
- Rechargeable batteries
- Packaging

### 3.5.5 OTHER WASTE PREVENTION ACTIVITIES

SPU contracts out commercial paper reduction, and junk mail, and yellow pages opt-out programs and requires regular data reporting. And as the city continues strong internal support for its green purchasing program, staff regularly compiles performance data.

## Green Purchasing

Working with the City of Seattle's Department of Finance and Administrative Services, SPU tracks the changes in purchasing from toxic or damaging products to less toxic or benign alternatives.

## Paper Cuts

Data from the city's internal paper reduction program are checked annually. Data can also be obtained from the consultant that provides Resource Venture services. Resource Venture provides outreach to businesses on conservation, recycling, and waste prevention.

## Waste Prevention and Recycling Matching Grants - School Food Waste

Through SPU's grants to schools, we will track the number of participating schools. The schools will provide SPU with information on numbers of compost collection container numbers, container sizes, and when or if they downsize garbage service.

## Junk Mail, Catalogs and Phone Books

Paper-use reduction from resident and business opt-outs from junk mail and catalog mailing lists, and from phone book delivery, can be measured from two sources.

- SPU will get the tonnage of paper saved from the contract vendor providing the junk mail opt-out services. The services are directly accessed from the City of Seattle's web pages. The vendor can track Seattle-origin opt-outs, and using postal service algorithms then report tonnage.
- Pending the outcome of a lawsuit in 2011, a similar service for yellow pages phone book opt-outs will be able to provide the tonnage of yellow pages phone books not delivered.

### 3.5.6 OVERALL GENERATION

One way to gauge waste prevention effectiveness is to look at the city's total generation rates, for both garbage and recycling. SPU tracks total generation annually, as can be seen in Figure 2-1 in Chapter 2. It is difficult to sort out all the different causes embedded in the trends, which have generally followed economic cycles. Nonetheless, we can use these data with the other measurement techniques discussed above to monitor overall waste reduction progress.



4

Seattle's MSW System:  
Managing Discards



**Kate Hunt**

*Flathead Grid No. 1, 2007*

Newspaper, steel, encaustic, twine

12 x 12 x 4.5 inches

# Contents

## Chapter 4 Seattle’s MSW System: Managing Discards..... 3

|            |                                                                            |           |
|------------|----------------------------------------------------------------------------|-----------|
| <b>4.1</b> | <b>Where MSW Starts and Ends.....</b>                                      | <b>3</b>  |
| <b>4.2</b> | <b>Collection.....</b>                                                     | <b>7</b>  |
| 4.2.1      | Collection Recommendations from 1998 Plan and 2004 Amendment.....          | 7         |
| 4.2.2      | Collection Planning Issues.....                                            | 8         |
| 4.2.3      | Current Collection Programs and Practices.....                             | 10        |
| 4.2.4      | Collection Alternatives and Recommendations.....                           | 14        |
| 4.2.5      | Monitoring and Performance Measurement.....                                | 14        |
| <b>4.3</b> | <b>Recycling.....</b>                                                      | <b>19</b> |
| 4.3.1      | Recycling Recommendations from 1998 Plan and 2004 Amendment.....           | 20        |
| 4.3.2      | Recycling Planning Issues.....                                             | 20        |
| 4.3.3      | Current Recycling Programs and Practices.....                              | 25        |
| 4.3.4      | Recycling Alternatives and Recommendations.....                            | 25        |
| 4.3.5      | Monitoring and Performance Measurement.....                                | 33        |
| <b>4.4</b> | <b>Transfer Facilities.....</b>                                            | <b>33</b> |
| 4.4.1      | Transfer Facilities Recommendations from 1998 Plan and 2004 Amendment..... | 33        |
| 4.4.2      | Transfer Facilities Planning Issues.....                                   | 37        |
| 4.4.3      | Current Transfer Facility Programs and Practices.....                      | 38        |
| 4.4.4      | Transfer Facilities Alternatives and Recommendations.....                  | 42        |
| 4.4.5      | Monitoring and Performance Measurement.....                                | 44        |
| <b>4.5</b> | <b>Processing and Disposal.....</b>                                        | <b>45</b> |
| 4.5.1      | Recommendations from 1998 Plan and 2004 Amendment.....                     | 45        |
| 4.5.2      | Planning Issues.....                                                       | 45        |
| 4.5.3      | Current Processing and Disposal Programs and Practices.....                | 50        |
| 4.5.4      | Alternatives and Recommendations for Processing and Disposal.....          | 55        |
| 4.5.5      | Monitoring and Performance Measurement.....                                | 56        |
| <b>4.6</b> | <b>Surveillance &amp; Control (Enforcement).....</b>                       | <b>57</b> |
| <b>4.7</b> | <b>Emergency Management.....</b>                                           | <b>57</b> |
| 4.7.1      | SPU Continuity of Operations Plan.....                                     | 57        |
| 4.7.2      | City of Seattle Disaster Debris Management Plan.....                       | 58        |

### List of Figures

|            |                                                     |    |
|------------|-----------------------------------------------------|----|
| Figure 4-1 | Seattle Municipal Waste System.....                 | 3  |
| Figure 4-2 | Seattle Solid Waste Facilities.....                 | 6  |
| Figure 4-3 | MSW Collection Service Areas by Vendor.....         | 11 |
| Figure 4-4 | Curbside Misses per 1000 Stops.....                 | 15 |
| Figure 4-5 | Dumpster Misses per 1000 Stops.....                 | 15 |
| Figure 4-6 | Repeats per 10,000 Stops for Curbside Services..... | 16 |
| Figure 4-7 | Percent Misses not Picked Up within 24 Hours.....   | 16 |

Figure 4-8 Late Container Deliveries per 100 Requests ..... 17  
 Figure 4-9 Recycling Rate Status Quo versus Recommended ..... 32

**List of Tables**

Table 4-1 Inventory of City of Seattle Solid Waste Facilities .....4  
 Table 4-2 Past Recommendations for Seattle MSW Collection .....7  
 Table 4-3 Customer Satisfaction ..... 18  
 Table 4-4 Past Recommendations for Seattle Solid Waste Recycling ..... 20  
 Table 4-5 Recent and Planned Waste Composition Studies (2000 – 2018)..... 21  
 Table 4-6 Single-Family Potentially Recyclable Materials ..... 21  
 Table 4-7 Multi-Family Potentially Recyclable Materials ..... 22  
 Table 4-8 Self-Haul Potentially Recyclable Materials ..... 23  
 Table 4-9 Potentially Recyclable Material Disposed 2009 in Commercial Sector..... 24  
 Table 4-10 Status Quo Scenario Recycling Programs ..... 27  
 Table 4-11 Status Quo Scenario Recycling Rate Projections ..... 27  
 Table 4-12 Modeled New Programs ..... 28  
 Table 4-13 Recommended Recycling Programs Implementation Schedule..... 31  
 Table 4-14 Recommended Programs Recycling Rate Projections..... 32  
 Table 4-15 Past Recommendations for Seattle Transfer Facilities ..... 34  
 Table 4-16 Seattle Transfer Station Construction Schedule ..... 37  
 Table 4-17 Transfer Services for Contractor-Collected Garbage and Yard Debris to NRDS and SRDS in 2010..... 39  
 Table 4-18 Self-Haul Service Provided by NRDS and SRDS in 2010..... 39  
 Table 4-19 Past Recommendations for Processing and Disposal Seattle MSW ..... 45  
 Table 4-20 Material Recycled in Seattle 2000 - 2010 ..... 50

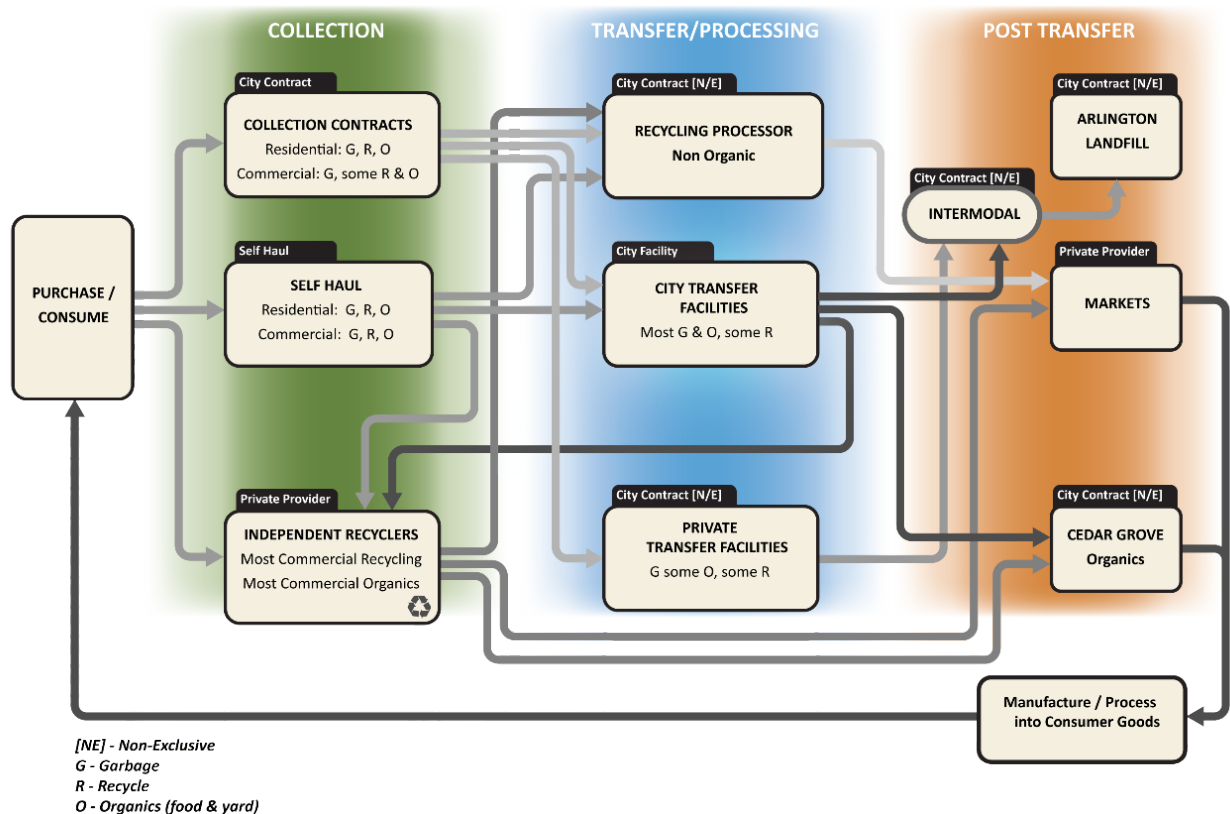
# Chapter 4 SEATTLE'S MSW SYSTEM: MANAGING DISCARDS

This chapter describes what Seattle does with the material left over after we've done everything we can to reduce waste generation in the first place. Seattle's Municipal Solid Waste system is the framework for discussing the waste management programs profiled in this chapter.

## 4.1 WHERE MSW STARTS AND ENDS

Many interrelated parts make up the Seattle Municipal Solid Waste (MSW) system (Figure 4-1). At each stage, SPU makes choices about how to handle the materials. Our programs reflect our decisions.

**Figure 4-1**  
**Seattle Municipal Waste System**



The first stage in the system is collecting the recycling, organics and garbage discarded by Seattle's homes and businesses. Collected materials are transported to transfer facilities or to processors (recycling and organics). From the transfer facilities, materials go to processors (recycling and organics), or in the case of garbage, to a railhead (intermodal). From the railhead, garbage goes to the landfill on a train. From processors, materials then go to brokers and markets.

A network of public and private service providers and facilities collect, transfer, process, and landfill the city's discards. This Plan includes the facilities shown in Table 4-1 as part of Seattle's MSW system.

**Table 4-1  
Inventory of City of Seattle Solid Waste Facilities**

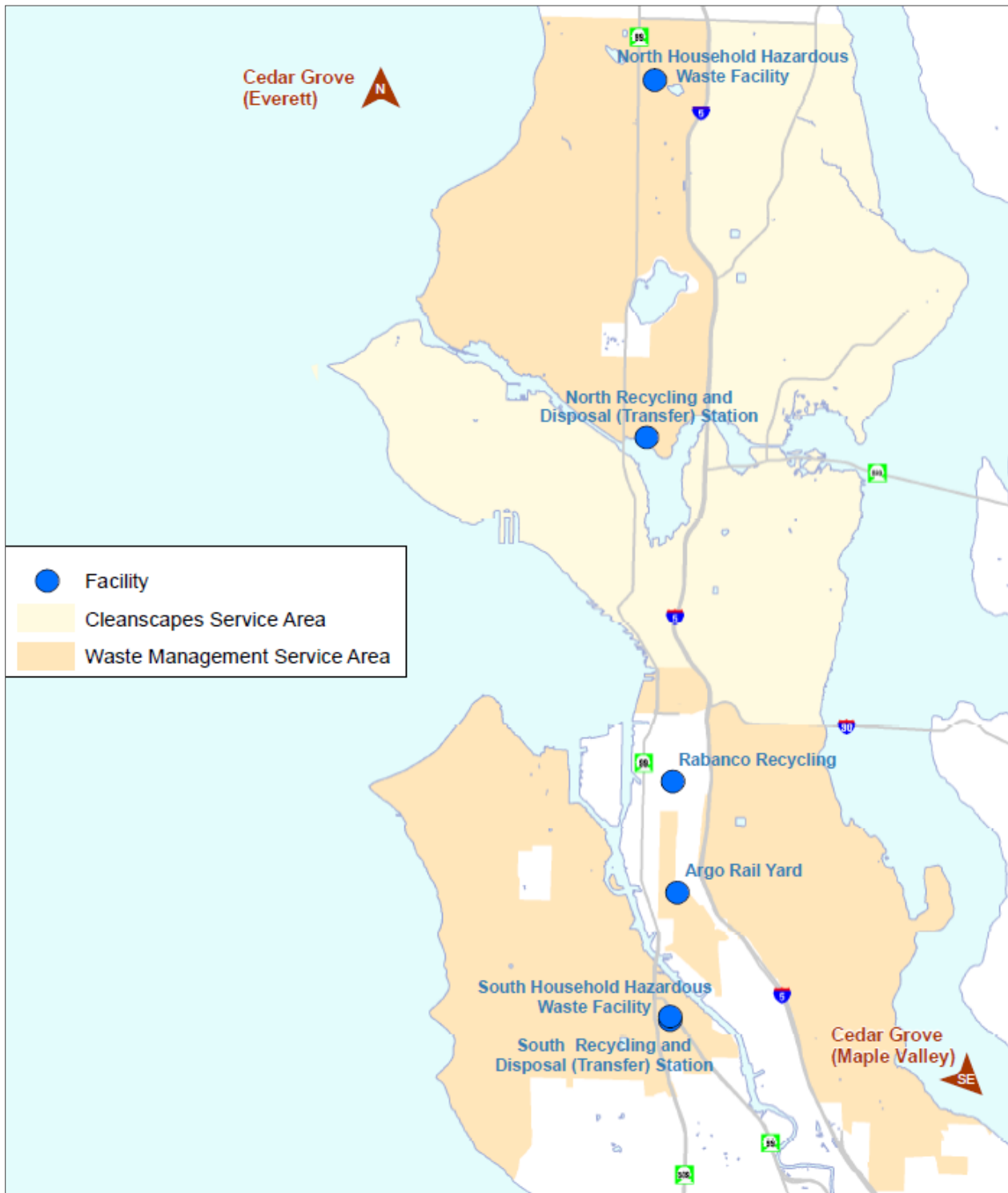
| Operator                                                                | Facility/Location                                                       | Type                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Permitted Facilities in Seattle - City Owned</b>                     |                                                                         |                                                                                                                                                                                                                                                                                                            |
| <b>SPU</b>                                                              | North Recycling and Disposal (Transfer) Station<br>1350 N 34th St 98106 | <ul style="list-style-type: none"> <li>Residential garbage and organics collection transfer</li> <li>Commercial garbage transfer</li> <li>Self-haul garbage, yard waste and recycling transfer</li> </ul>                                                                                                  |
| <b>SPU</b>                                                              | South Recycling and Disposal (Transfer) Station<br>8105 5th Ave S 98134 |                                                                                                                                                                                                                                                                                                            |
| <b>SPU</b>                                                              | North Household Hazardous Waste Facility<br>12500 Stone Way N           | Moderate risk waste (MRW) facility                                                                                                                                                                                                                                                                         |
| <b>SPU</b>                                                              | South Household Hazardous Waste Facility<br>8100 2nd Ave S              | MRW facility                                                                                                                                                                                                                                                                                               |
| <b>Seattle City Light</b>                                               | 3613 4th Ave S                                                          | MRW facility                                                                                                                                                                                                                                                                                               |
| <b>Permitted Facilities in Seattle - Privately Owned</b>                |                                                                         |                                                                                                                                                                                                                                                                                                            |
| <b>Rabanco Recycling under Republic Services' Allied Waste Services</b> | Recycling Transfer Intermodal<br>2733 3rd Ave S 98134 (3rd & Lander)    | <ul style="list-style-type: none"> <li>Recycling processing</li> <li>Transfer of collected garbage and yardwaste from out of jurisdiction construction &amp; demolition (C&amp;D) transfer</li> <li>Intermodal C&amp;D transfer and garbage from outside of jurisdiction for long-haul disposal</li> </ul> |
| <b>Waste Management Inc (WMI)</b>                                       | Alaska Reload<br>70 S Alaska St                                         | Contaminated soil transfer                                                                                                                                                                                                                                                                                 |
| <b>WMI</b>                                                              | Eastmont Transfer Station<br>7201 W Marginal Way                        | <ul style="list-style-type: none"> <li>C&amp;D transfer</li> <li>Some commercial garbage transfer</li> <li>Some commercial recycling transfer</li> <li>Some residential and commercial organics transfer</li> </ul>                                                                                        |
| <b>WMI</b>                                                              | Biomedical Waste Facility<br>149 SW Kenyon St                           | Biomedical treatment                                                                                                                                                                                                                                                                                       |
| <b>Union Pacific Railroad</b>                                           | Argo Rail Yard<br>402 S Dawson St                                       | Intermodal transfer of C&D and garbage to long-haul disposal                                                                                                                                                                                                                                               |
| <b>CDL Recycle</b>                                                      | Construction Materials Recovery Facility<br>7201 E Marginal Way         | C&D debris recycling                                                                                                                                                                                                                                                                                       |
| <b>Certain Teed Gypsum</b>                                              | Gypsum products manufacture<br>5931 E Marginal Way S                    | Gypsum recycling                                                                                                                                                                                                                                                                                           |
| <b>LaFarge</b>                                                          | Cement plant<br>5400 W Marginal Way SW                                  | Aggregate and concrete recycling                                                                                                                                                                                                                                                                           |



| Operator                                                                     | Facility/Location                                                                                             | Type                |
|------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------|
| <b>Privately Owned Facilities Outside Seattle Relevant to Seattle System</b> |                                                                                                               |                     |
| <b>Cedar Grove</b>                                                           | Composting<br>A) 17825 Cedar Grove Rd SE<br>Maple Valley, WA 98038<br>B) 3620 36th Pl NE<br>Everett, WA 98205 | Organics composting |
| <b>WMI</b>                                                                   | Columbia Ridge Regional<br>Landfill<br>18177 Cedar Springs Lane<br>Arlington, OR 97812                        | Landfill disposal   |
| <b>Republic Services</b>                                                     | Roosevelt Landfill<br>500 Roosevelt Grade Road<br>Roosevelt, WA 99356                                         | Landfill disposal   |

The location of the key City of Seattle facilities is shown on Figure 4-2. We do not list other facilities important to other regional jurisdictions. Also not listed are the dozens of privately operated recycling handlers in the local area. Those private recyclers that handle materials generated from Seattle, however, are required to report annually to the City of Seattle. SPU receives the reports and maintains the data submitted in them.

**Figure 4-2**  
**Seattle Solid Waste Facilities**



## 4.2 COLLECTION

In this section, we present recommendations from Seattle's prior solid waste management plan and their progress. We lay out current planning issues, services, and programs and alternatives



for program changes. The section concludes with a description of how SPU monitors collection performance.

### 4.2.1 Collection Recommendations from 1998 Plan and 2004 Amendment

Collection is the stage in Seattle's MSW system where residents and businesses interact the most with materials they discard and the services that collect those discards. It is also the stage where SPU can most influence customer behavior.

Most recommendations from the 1998 Plan and 2004 Update addressed collection (Table 4-2).

**Table 4-2**  
**Past Recommendations for Seattle MSW Collection**

| Recommendation                                                                                                                                                                                   | Status                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| <b>1998 Plan</b>                                                                                                                                                                                 |                                                                       |
| Distribute recycling containers to all single-family residents                                                                                                                                   | Done                                                                  |
| Provide recycling collection at least every other week for all single-family residents                                                                                                           | Done<br>Now occurs every other week                                   |
| Eliminate the rigid distinction between single-family and multi-family in recycling collection                                                                                                   | Done<br>Multi-family buildings can choose cart or dumpster collection |
| Implement a vigorous campaign to encourage multi-family building owners to sign up for recycling, and mandate sign-up if goals are not met                                                       | Done<br>Signups now >98%                                              |
| Provide in-unit recycling containers or other incentives to multi-family tenants                                                                                                                 | Blue bags implemented 2002<br>Phased out 2004                         |
| Evaluating benefits of requiring space for garbage and recycling containers in new commercial and multi-family construction and remodeling would ensure that space barrier is not a future issue | Done                                                                  |
| Add voluntary food waste collection for single-family residents                                                                                                                                  | Done                                                                  |
| Promote commercial food waste separation                                                                                                                                                         | Several collection options (including one municipal option)           |
| Provide recycling collection to small businesses                                                                                                                                                 | Done                                                                  |
| Provide more opportunities for recycling at Home Clean-up drop sites                                                                                                                             | Home Clean-up program dropped                                         |
| Customers will not be allowed to set yard waste at curb in plastic bags                                                                                                                          | Done                                                                  |
| Same-day collection of all materials from single-family residences                                                                                                                               | Done                                                                  |
| In final decision on collection frequencies for single-family yard waste and recycling, and sorting recyclables, city will balance customer service, cost, and environmental concerns            | Done<br>Organics and garbage weekly<br>Recycling every other week     |
| City will work with Health Department to evaluate and test feasibility of collecting garbage every other week                                                                                    | Pilot done in Renton                                                  |

| Recommendation                                                                                     | Status                                                                                   |
|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| <b>2004 Amendment</b>                                                                              |                                                                                          |
| Increase the efficiency, fairness, convenience, and accessibility of services                      | Done                                                                                     |
| Manage current contracts to provide service efficiency and high-quality customer service           | Done<br>New contracts have more financial incentives for good performance                |
| Evaluate current policies and service delivery strategies                                          | Done                                                                                     |
| Partially integrate commercial and residential services to create more efficient collection routes | Done<br>Commercial and residential served by same contractors/trucks within service area |
| Provide yard debris containers to single-family residents                                          | Done                                                                                     |
| Increase yard debris pickups to every other week year-round                                        | Now every week                                                                           |
| Commercial food scraps collection service.                                                         | Done                                                                                     |
| Curbside recycling service expanded to all businesses (up to two 90-gallon carts every other week) | Done                                                                                     |

## 4.2.2 Collection Planning Issues

Several issues must be considered in MSW collection planning.

### Legal Requirements

In Seattle, SPU is responsible for managing the solid waste system. The Seattle Municipal Code establishes the following requirements:

- Hauling residential garbage, recycling, and organics; commercial garbage; and construction & demolition (C&D) waste in Seattle is limited to designated contractors. Generators may self-haul these materials. (Multi-family residential units may use either City of Seattle or private contractors for recycling and organics.)
- All non-recycled garbage in Seattle must ultimately go to the city's contracted landfill.
- All non-recycled C&D waste in Seattle must ultimately go to designated facilities.
- All residential (single- and multi-family) customers must subscribe to garbage collection service. All single-family residential customers must subscribe to organics collection service unless they compost vegetative food scraps in their own yard. All multi-family customers must subscribe to organics collection service beginning September 2011.
- Yard waste, paper, cardboard, and hazardous waste are banned from the garbage in all MSW sectors. Bottles and cans are also banned from the garbage in the residential sectors.

### The 60% Recycling Goal

Much of Seattle's recycling success comes from providing convenient separation bins and reliable collection service. While Seattle's recycling rate continues to climb and is now at an all-time high, much more must be done to reach Seattle's 60% goal. See section 4.3 for an [overall discussion of recycling](#).

## Collection (Generation) Growth

The effect of the recent recession is evident in the 15% drop in total generation between 2007 and 2009. The 2007 level of waste generation is not expected to be reached again until 2026. The SPU collection infrastructure is quite likely to be adequate for the next couple of decades.

## Cost Effectiveness

Cost effectiveness is one of the factors SPU looks at when deciding changes to collection programs.

## Affordability

SPU will continue to examine ways to reduce both overall cost of the MSW system and provide options to help customers keep their collection bill low through reducing, recycling, and composting.

## Contamination Rates

Recent waste sorts have revealed a small growth in the contamination rate (amount of garbage put in with recycling). Some of this increase may be from co-mingling glass with other recyclables. Some may be from customer confusion over the increased number of materials now recycled. SPU will continue to monitor contamination through regular waste sorts and will develop corrective actions if the trend becomes a problem.

## Collection Practices and Environmental Protection

Collection protects the environment by supporting recycling. Beyond the benefits of recycling, SPU looks for the following specific opportunities to protect the environment:

- Continuing to find opportunities to reduce green house gas emissions from collection operations. Examples include optimizing route efficiency, and the clean truck fuel requirements in the collection contracts that started in 2009.
- Collecting used motor oil keeps this material from entering the city's drainage system. Similar programs for other materials may also benefit this part of our environment.
- Collecting used consumer electronics puts metals and other materials into the recycling stream.

## Shifts in Customer Base over Time

Seattle will shift away from manufacturing enterprises toward more service and office-type businesses. See Chapter 2, Seattle Solid Waste Trends, Table 2-2.

## Shifts in Consumption over Time

As consumption patterns change, so does the composition of discards. As new products and materials are continuously introduced, SPU must analyze them frequently enough to identify and readily respond to change.

## Equity in Service

SPU will continue to emphasize monitoring all neighborhoods in Seattle for a consistent high level of service, regardless of ethnic or racial composition.

## Infrastructure Disruptions

The Alaskan Way Viaduct and North Transfer Station rebuilds will temporarily reroute collection trucks. The new 2009 collection contracts anticipated these events and contain provisions for handling them. See section 4.4, [Transfer Facilities](#), for more detail.

## Customer Service

SPU will continue to examine and implement ways to improve collection service and the responsiveness of our Call Center.

### 4.2.3 Current Collection Programs and Practices

Two city-contracted companies, Waste Management and Cleanscapes, collect residential and commercial garbage, recycling, and organics. Current contracts started in March 2009 and will run at least until 2017 (Figure 4-3).

SPU designs collection services according to goals for, and needs of each sector. Service areas and routes are planned for efficient use of collection vehicles. It is also important to even out the amount of material collected each day. Transfer and processing facilities need an even, predictable inflow to avoid having to stockpile incoming materials.

The self-haul sector may also be considered a means of collection as residents and businesses gather and transport their discards.

In the residential sector, which includes both single- and multi-family units, garbage, recycling, and organics are collected by either Waste Management or Cleanscapes. All residences in Seattle must subscribe to garbage collection service.

The contractors take residential garbage to one of two city-owned transfer stations. Occasionally, residential garbage is taken to private transfer facilities, such as when a city station needs to close temporarily due to a major equipment failure.

Residential organics (combined yard/garden trimmings, all food scraps, and food-contaminated paper) are also picked up then transferred at Seattle's two transfer stations. Yard waste is legally prohibited from garbage.

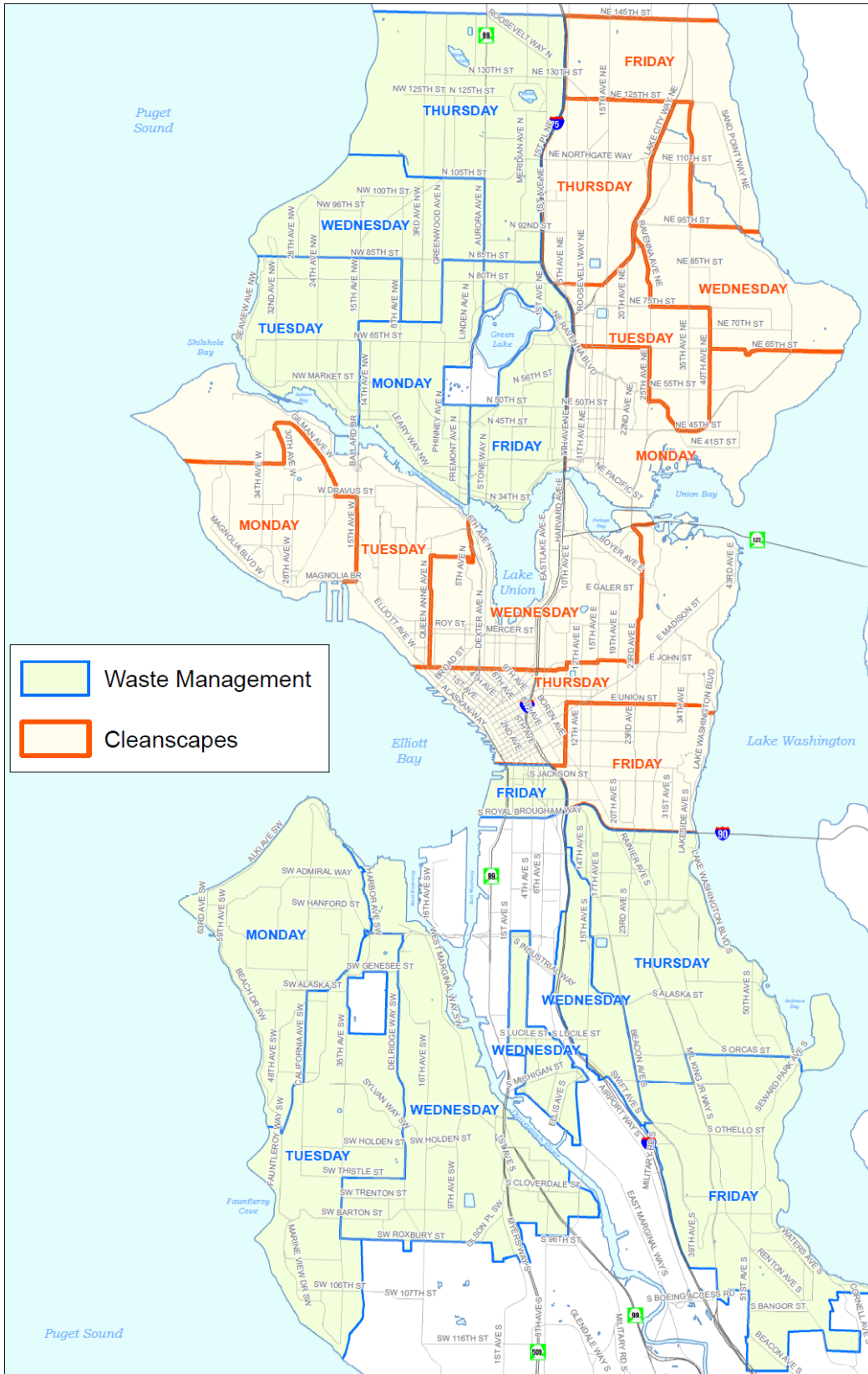
Residential recyclables are picked up and deposited at a [sorting plant](#) (processor). SPU maintains a list of [accepted materials](#).

### Single-Family Residential Collection Service Levels

Single-family residences must sign up for garbage collection service. Garbage is collected weekly. All materials are collected on the same day to avoid customer confusion. Residents may choose from several sizes of garbage cans or carts. Price goes up with the size of can to encourage recycling. Customers set the cans out at the curb or alley on their collection day. Backyard service is available for a fee or free for qualified (usually for disability reasons) customers. Extra garbage, properly contained, may be set out for a fee.



Figure 4-3  
MSW Collection Service Areas by Vendor



For single-family customers, recycling is collected every other week. Customers automatically sign up for recycling when they request garbage collection. The garbage fee includes recycling service. Customers place their recycling in either a 64- or 96-gallon wheeled cart, which they put out at the curb or alley on the collection day for garbage.

In 2009, Seattle's recycling collection went single stream. *Single stream* means all recyclables go into one bin. Extra recycling, properly contained, may be set out free.

Organics are collected weekly. Currently, all single-family customers must subscribe to organics collection service, unless they compost their food waste in their back yard. Customers may choose from three sizes of wheeled carts. (Price goes up with size to encourage onsite backyard composting.) Customers put their organics carts at the curb or alley on the same collection day as garbage. Extra organics, properly contained, may be set out for a fee.

Single-family customers also have other materials they may set out for collection: used motor oil (properly contained), bulky items (extra fee), and electronics (extra fee).

Single-family customers may also request a dumpster for times when they have extra large volumes of material.

## Multi-Family Residential Collection Service Levels

SPU's collection contractors pick up garbage from multi-family buildings at least once a week. Various sizes of dumpsters, and some wheeled carts, are available to customers in this sector. Collection frequency and dumpster size depend on the needs and space constraints of the building, and determine the monthly fee. Price goes up with container size and frequency to encourage recycling. Multi-family buildings are required to subscribe to garbage service.

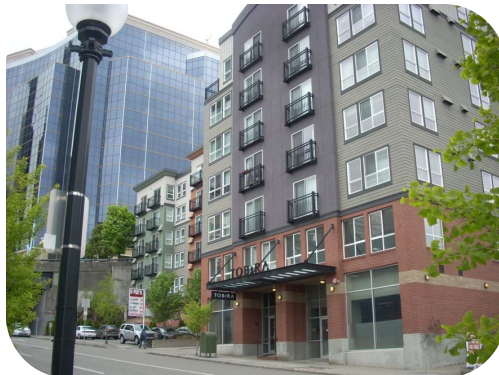


Recycling service is available at no charge to multi-family buildings. Each property is assessed for type and size of containers and collection frequency. Depending on a property's needs, it may have a combination of recycling carts and dumpsters. Most apartment buildings and condominiums have recycling collected every other week.

About 96% of multi-family buildings are registered for recycling service. Seattle law bans placing recyclables in residential garbage. However, multi-family buildings are not required to sign up for recycling. Buildings that have recycling can usually reduce garbage service and lower costs.

Organics service was optional in this sector until September 2011, when it became a requirement. Again, building needs determine container size and collection frequency.

The following additional services are also available: used motor oil recycling, bulky item pickup, and electronics recycling. Residents must arrange these services with building management.





## Commercial Collection Service Levels

In the commercial sector, garbage is handled much as it is in the residential sector. Garbage from dumpsters of various sizes is collected weekly or more frequently by city contractors and transferred at the two Seattle transfer stations. The monthly fee depends on container size and how often it is picked up. Price goes up with container size and collection frequency, to encourage recycling. Commercial businesses do not have to subscribe to garbage collection service. They can [self-haul](#) to a city or private transfer station.

Recycling collection in the commercial sector is much more diverse. A small part of this stream uses the cart-based, city-contracted, biweekly residential curbside recycling system. Seattle offers this service at no additional charge. However, a wide variety of haulers collects most recyclables in the commercial sector. They collect various materials in various states of sorting from a wide variety of dumpster sizes, including some onsite compactors. Collectors sometimes take materials to full-scale sorting facilities and sometimes to specific brokers. City law bans the disposal of paper and cardboard in the garbage. Starting 2012, a new City of Seattle law bans disposal of asphalt, brick, and concrete in commercial garbage.

Commercial customers with organics have several options for collecting these voluntarily separated materials. They may use one of two city-contracted collection services or a private collection service. Typically, the collected organics go straight to the compost facility instead of to a transfer facility. Or, when customers subscribe to the city-contract cart-based organics (residential-type) service, the materials go to a city transfer facility before going to the processor.

## Self-Haul Collection Service Levels

Businesses may haul their garbage, organics (yard and food waste), and recyclables to either of the two city-owned transfer stations. See section 4.4, Transfer Facilities, for more detail on [accepted materials](#). Businesses may also take garbage and yard waste to private transfer stations. Private stations require that they be contacted for accepted vehicles and materials. Recyclables may also be taken to various recycling processors.

When residential customers have quantities of materials or materials unsuitable for curb service, they also may bring the materials to city-owned recycling and disposal stations. However, SPU encourages these customers to use regular and special curb services instead, whenever possible to keep station traffic to a minimum. Curb services are often cheaper for the customer. Smaller vehicles used by residents usually require hand unloading. Most private facilities do not do allow unloading by hand.

## Outreach and Education for Collection

SPU's integrated solid waste outreach and education programs are described in Chapter 6, Administration and Financing, section 6.2. SPU has achieved high customer understanding of and awareness for:

- How to sign up for and change service (customer service functions)
- When to set out materials (collection calendars)
- What to put in each can or bin (color-coded cans, stickers with pictures, what-do-I-do-with online, etc.)

## 4.2.4 Collection Alternatives and Recommendations

Recommendations for collection fall into two categories: recycling and collection system.

### Collection Recycling Recommendations

The major focuses of collection recycling recommendations include:

- Enhancing recycling education approaches
- Increasing awareness of customer options for additional recycling set-outs, including unlimited free extras, and larger cart or additional carts on request
- Expanding contamination outreach and enforcement, especially for non-compostable materials in organics collection
- Increasing enforcement of current disposal bans
- Banning certain additional materials from disposal in the garbage
- Considering changing single-family garbage collection from weekly collection to every other week.
- Composting pet waste and diapers

See section 4.3, [Recycling](#), for detailed recycling recommendations, including those for collection.

### Collection System Recommendations

Recommendations for the collection stage of SPU's MSW system structure center on the strong foundation of current practices.

#### Continue Current Practice of Contracting Out

Bidding out sections of Seattle for collection services achieves the best price for SPU ratepayers by encouraging competition. Current contracts started in 2009. The contract with Cleanscapes is set through at least 2017. The city has opt-out options in 2017, 2019, and 2021. The contract with Waste Management is set through 2019 with city out-out options in 2019 and 2021.

#### Continue Monitoring Collection Performance

SPU closely monitors collection contractor performance for reliable collection, timely container delivery, satisfaction, and equity of service. Monitoring performance is critical for ensuring contractors meet their obligations and customers receive the service SPU promises. Details about performance monitoring follow.

## 4.2.5 Monitoring and Performance Measurement

SPU expects to continue current performance measures, addressing reliable collection, timely container delivery, customer satisfaction, and service equity.

## Reliable Collection

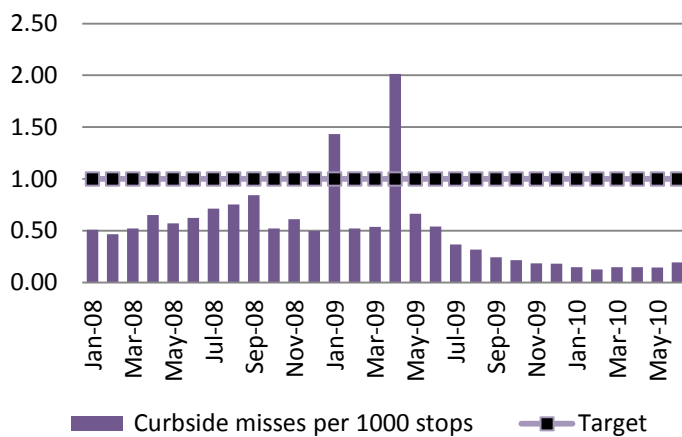
SPU tracks the following missed collection categories to measure collection reliability collection: initial misses, repeat misses, and collection of misses. The service target for missed pickups is one miss per 1000 scheduled pickups (target = 1/1000 collection). At the highest level, SPU tracks misses whether the customer is:

- **Curbside** — Cart customers, who are mostly single-family residential
- **Dumpster** — Dumpster customers, who are most of Seattle's multi-family customers and commercial businesses

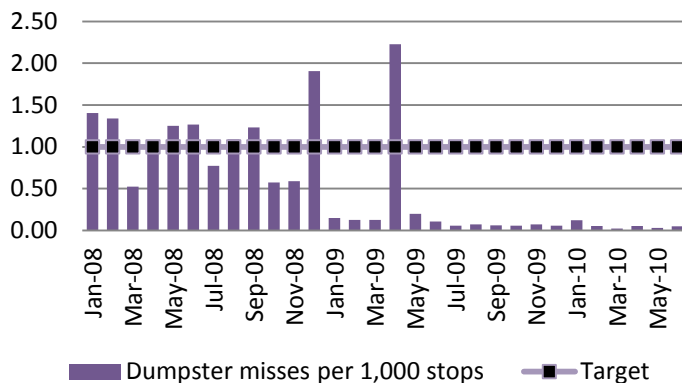
Misses are tracked this way because truck-type and routes differ for each. If needed for trouble shooting, more detailed miss data are gathered and maintained, including address and collector.

Figures 4-4 and 4-5 show curbside and dumpster misses for the year before the new collection contracts, the transition to the new collection contracts begun March 31, 2009, and a full year post implementation.

**Figure 4-4**  
**Curbside Misses per 1000 Stops**

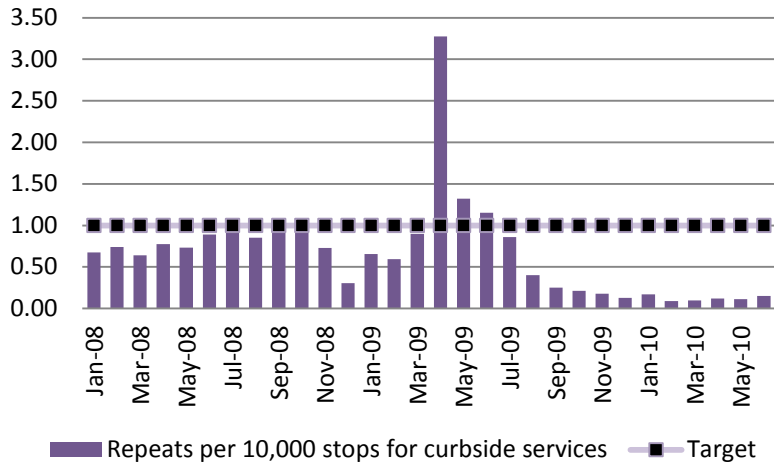


**Figure 4-5**  
**Dumpster Misses per 1000 Stops**



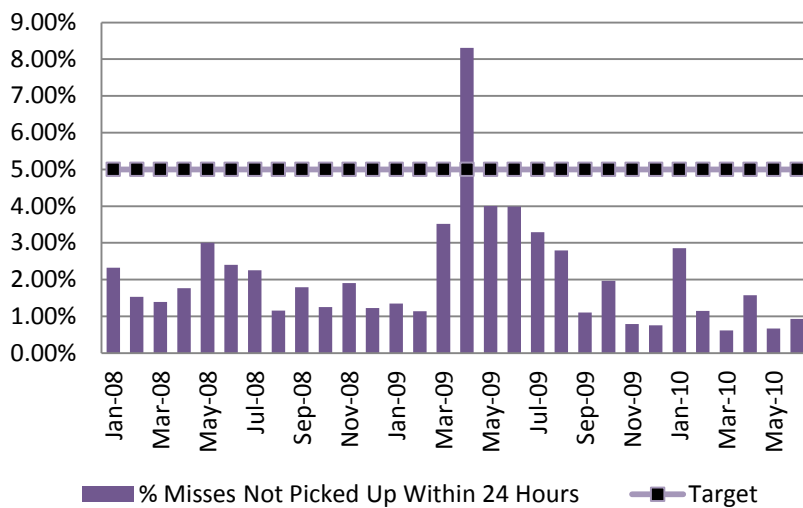
SPU also tracks repeat misses (how many times a missed customer is missed again). The service target for repeats is one miss per 10,000 scheduled pickups (target = 1/10,000 collection). Figure 4-6 shows repeat misses before, during and a full year after the transition to new collection contracts starting March 31, 2009.

**Figure 4-6**  
**Repeats per 10,000 Stops for Curbside Services**



The third aspect of missed collection that SPU tracks is whether a miss is promptly picked up after reported. The target is to pick up 95% missed collection within 24 hours (target = 95%). Figure 4-7 tracks miss collecting over the periods before, during, and after transition to new collection contracts.

**Figure 4-7**  
**Percent Misses not Picked Up within 24 Hours**

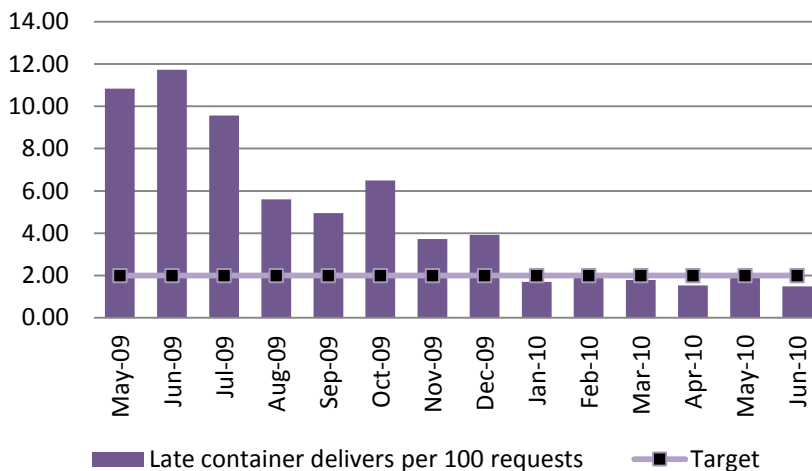


## Timely Container Delivery

Customers sometimes need a replacement container or different containers due to service changes. When SPU implemented new collection contracts March 31, 2009, it needed many container changes. Timely delivery emerged as a new performance issue to track. The target is to deliver 98% of containers within 5 business days (target = 98%). Late container deliveries have dropped since SPU started tracking this measure a year after transition (Figure 4-8).



**Figure 4-8**  
**Late Container Deliveries per 100 Requests**



## Overall Customer Satisfaction

SPU surveys its residential customers every even-numbered year (Table 4-3). One question asked is the overall satisfaction level for garbage, recycling, and organics collection. SPU's goal is to score no lower than a "5" on a 1 to 7 scale. Similarly, we survey commercial customers with the same questions every other odd-numbered year. During the recession, SPU suspended the customer survey.

**Table 4-3  
Customer Satisfaction**

|                                  | Satisfaction Level <sup>†</sup> |
|----------------------------------|---------------------------------|
| <b>Residential - 2011 Survey</b> |                                 |
| Garbage Pick-up                  | 6.00                            |
| Recycling Services               | 5.98                            |
| Yard and Food Waste Pick-up      | 6.09                            |
| <b>Commercial - 2011 Survey</b>  |                                 |
| Garbage Pick-up                  | 5.67                            |
| Recycling Services*              | 5.69                            |
| Yard and Food Waste Pick-up      | 5.45                            |

<sup>†</sup>Scale = 1 (not satisfied) to 7 (very satisfied)

\*Mix of city-contractor and private service

## Equity of Service

Several years ago, SPU did a statistical study to determine if there was any relationship between missed single-family solid waste collection and percentage of people of color in a neighborhood. Using in-house service data and 2000 Census data, we determined that there was a statistically significant relationship. The higher the percentage of people of color, the higher the collection miss rate. Further investigation showed that three factors drive this relationship:

- Overall density of customers per unit of area
- Frequency of special back yard services (as opposed to curbside services)
- Ratio of multi- to single-family dwellings

Each factor was positively correlated with collection miss rate. When the analysis was controlled for these factors, the correlation of collection misses and percentage of people of color in a neighborhood disappeared.

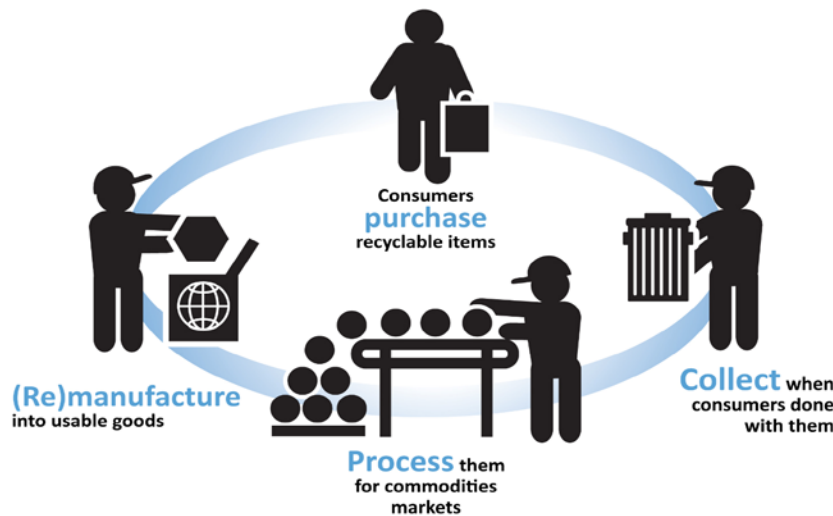
SPU highlighted these results with our new contractors before our new 2009 contracts began. We also introduced a more comprehensive set of performance incentives in the 2009 contracts. Under the new contracts, overall performance has increased. And there is no apparent statistically significant relationship between percentage of people of color in a neighborhood and collection miss rate.

## 4.3 RECYCLING

After waste prevention and reuse, the next best option for dealing with discards is to recycle them. Recycling isn't a program in itself. It is a strategy carried out in education, waste prevention, market development, collection, processing and other programs. See Chapter 2, Seattle Solid Waste Trends, for recycling achievement history.

The environmental benefits of recycling are well known:

- Less pollution to land, water, air (less greenhouse gas emissions)
- Less demand for virgin resources
- Habitat conservation
- Energy savings



### Recycling Turns Used Products into New

The biggest savings from recycling are the avoided environmental costs of producing new products, particularly from lower energy use. Recycling conserves resources by keeping them in circulation. It reduces depletion of non-renewable resources such as fossil fuels and mineral ores used to manufacture products from virgin materials. Composting organic materials, like yard and food wastes, recycles them to the soil. It imitates natural processes of decay and regeneration.

Recycling can also save money if there are markets for the collected materials. Seattle's recycling collection has saved millions of dollars for ratepayers over the last 20 years.

Recycling's ability to reduce greenhouse gas emissions is increasingly a focus of climate protection. For example, the emissions reduction potential of diverting 1 year's worth of food scraps from landfills through composting is equal to about 1.8% of Washington's 2050 greenhouse gas emissions reduction goal.

But, recycling is not a cure-all. It has an environmental impact. Collection, sorting, transportation, and re-manufacture of recyclables all use non-renewable resources that can contribute to pollution. There is always some loss, some waste, as the material goes round the cycle. A piece of office paper, for instance, can only be recycled a limited number of times before its fibers lack the strength to undergo the process any more.

### 4.3.1 Recycling Recommendations from 1998 Plan and 2004 Amendment

The previous plan and its amendment recommended several recycling options (Table 4-4).

**Table 4-4  
Past Recommendations for Seattle Solid Waste Recycling**

| Recommendation                                                                                         | Status                                                                                                                                               |
|--------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1998 Plan</b>                                                                                       |                                                                                                                                                      |
| Recycle 60% of waste generated in Seattle by 2008                                                      | 2009 recycling rate = 51.1%, about 10 percentage points above 2004 level. Goals still 60%, reset to achieve by 2012 by Resolution 30990              |
| Expand local markets and increase purchases of recycled content products                               | Markets continue strong. City Purchasing promotes recycled content                                                                                   |
| Provide technical assistance and recycled product performance testing                                  | Dropped                                                                                                                                              |
| Propose mandates or bans if sector goals are not being achieved                                        | Variety of bans on disposal of recyclables implemented for residential, commercial and self-haul sectors since the 1989 ban on yard waste in garbage |
| Increase employee recycling education and participation in internal city recycling programs            | Ongoing                                                                                                                                              |
| Broaden the buy-recycled program to incorporate a wider range of environmentally responsible practices | Ongoing                                                                                                                                              |
| <b>2004 Amendment</b>                                                                                  |                                                                                                                                                      |
| Target recyclable materials that are being landfilled in large quantities                              | Ongoing                                                                                                                                              |
| Expand local markets and increase purchases of recycled content products                               | Markets continue strong. City Purchasing promotes recycled content. Leadership role in this area                                                     |
| Implement new recycling programs to meet the 60% goal                                                  | New programs implemented                                                                                                                             |
| Commercial paper and cardboard disposal ban                                                            | Implemented 2005                                                                                                                                     |
| Commercial yard debris disposal ban                                                                    | Implemented 2005                                                                                                                                     |
| Residential disposal ban on paper, cardboard, bottles, and cans (that is, current recyclables)         | Implemented 2005                                                                                                                                     |

### 4.3.2 Recycling Planning Issues

This section describes issues that influence recycling planning in Seattle.

#### **The Zero Waste Resolution New Recycling Directives**

The 2007 City Council *Zero Waste Resolution* (Resolution 30990) outlined key additions to SPU's solid waste work plan. Many of the actions are accomplished or well underway. Funding constraints inhibited progress on others. See Appendix B, *Zero Waste Resolution (Resolution 30990)*.



## Measuring Recycling

Waste prevention can complicate measuring recycling. Successful waste prevention, the first strategy toward zero waste, reduces all discards, including recycling. For example, cutting back on phone book deliveries reduces paper use, but it also reduces the amount of paper that can be recycled and counted toward the recycling goal. The difficulty of measuring waste prevention (tons never created and tons that don't enter the MSW system) compounds the problem. When supportable metrics are available, SPU calculates tons prevented and "credits" them toward the recycling rate.

## Regular Waste Sorts

Regular waste sorts are critical for program planning (Table 4-5). The recycling rate is only one facet of knowing how we're doing. SPU also needs to know what our programs are not diverting, and we do that through regular studies of waste stream composition. Knowing what's being disposed of in the garbage and who put it there is critical planning information. Waste sorts are now on a (roughly) 4-year cycle. See the [SPU website](#).

**Table 4-5  
Recent and Planned Waste Composition Studies (2000 – 2018)**

| Sector                         | Year |      |      |         |      |
|--------------------------------|------|------|------|---------|------|
| Residential                    | 2002 | 2006 | 2010 | 2014    | 2018 |
| Commercial & Self-Haul         | 2000 | 2004 | 2008 | 2012    | 2016 |
| C&D Debris at Private Stations |      | 2007 |      | 2012-13 |      |

The C&D facility certification we are proposing will include regular assessments of disposed materials. See Chapter 5, Other Seattle Solid Waste Programs, section 5.1 for more detail on C&D debris.

## Programming Needs for Recyclables

Each sector differs in what remains to be recycled from the garbage.

### Single-Family Sector

Seattle's single-family sector recycling rate reached 70.3% in 2010. Analysis of 2009 recycling results showed that about 51% of the disposed materials could have been recycled under current programs (Table 4-6).

**Table 4-6  
Single-Family Potentially Recyclable Materials**

| Recyclable Material                 | 2009 Disposed Tons | Recovery Rate |
|-------------------------------------|--------------------|---------------|
| Organics - Food & Compostable Paper | 24,000             | 50%           |
| Organics - Yard Waste               | 1,000              | 98%           |
| Recyclable Paper                    | 5,000              | 88%           |
| Other "Curb" Recyclables            | 4,000              | 81%           |

The biggest gains would come from targeting food scraps and compostable paper. Beginning in 2005, customers could put all foods (except meat and dairy) and compostable paper in the organics bin. In 2009, SPU allowed meat and dairy, with the

switch to weekly organics collection and mandatory sign-up for organics bins. The 2009 changes—known as the *universal service requirement*—are already yielding increased diversion and should continue to ramp up over the next few years. SPU plans continued outreach and education as customers get used to putting compostables in an organics bin.

Pet waste and diapers comprised a notable 17,000 tons (25% of disposed tons 2009) of single-family disposed waste. Currently, no diversion options exist beyond private reusable cloth diaper service.

The following factors make programming unique to the single-family sector:

- Direct link between a consumer's purchasing and disposal practices and costs
- Ability to communicate directly to persons responsible for a home's waste behaviors
- Largest sector (152,309 accounts in 2009). Requires a lot of tactical planning for significant program changes
- Homogenous service design (the same set of service options) works for most.

### Multi-Family Sector

The multi-family sector recycling rate hovered between 28.3% and 27.0% in 2007 through 2009. It then rose to its highest ever rate 29.6% in 2010. Analysis of 2009 recycling results showed that about 58% of disposed materials could have been recycled under current programs (Table 4-7).

**Table 4-7**  
**Multi-Family Potentially Recyclable Materials**

| Recyclable Material                 | 2009 Disposed Tons | Recovery Rate |
|-------------------------------------|--------------------|---------------|
| Organics - Food & Compostable Paper | 19,000             | 1%            |
| Organics - Yard Waste               | 1,000              | 44%           |
| Recyclable Paper                    | 6,000              | 68%           |
| Other "Curb" Recyclables            | 4,000              | 57%           |

Food and compostable paper are the prime targets in the multi-family sector. The sector considerably lags the single-family's diversion rate for other recyclables banned from disposal. In third quarter 2011, all multi-family buildings are required to sign up for organics service. Organics diversion should ramp up in the future.

Pet waste and disposable diapers comprised 6,000 tons in 2009, or about 12%, of this sector's disposed waste.

The following factors make programming to the multi-family sector unique:

- Building operators, not tenants, subscribe for service, losing the economic incentive to recycle or compost instead of disposing in the garbage.
- It takes extra effort for SPU to communicate directly with tenants because building operators are the subscribing customer. Tenant populations move more often and have a larger proportion of people who do not speak English.

- In 2009, SPU had 5,383 multi-family dumpster accounts serving over 100,000 households.
- The physical layouts of buildings all differ, with differing abilities to store and service collection containers.

### Self-Haul Sector

Self-haul recycling has consistently hovered in the 17 to 19% range over the last 10 years, dropping to 13.5% in 2010 (Table 4-8). About 40% of self-hauled material was potentially recyclable, based on 2009 recycling analysis.

**Table 4-8  
Self-Haul Potentially Recyclable Materials**

| Recyclable Material                 | 2009 Disposed Tons | Recovery Rate |
|-------------------------------------|--------------------|---------------|
| Organics - Food & Compostable Paper | 2,000              | 0%            |
| Organics - Yard Waste               | 1,000              | 90%           |
| Recyclable Paper                    | 4,000              | 27%           |
| Other Recyclables                   | 3,000              | 64%           |
| Potentially Recyclable - C&D Debris | 23,000             | 1%            |

SPU expects some improvement in recovering presently recyclable materials with the rebuilding of the transfer stations. However, significant improvements depend on creating a post-consumer sorting function for construction debris and clean wood, which makes up more than 60% of this sector's disposed waste stream.

The following factors make programming to the self-haul sector unique:

- Commercial businesses and large institutions (for example, Seattle Housing Authority, University of Washington) bring the bulk of material self hauled to the transfer stations. If they have pure loads of recyclables, they can usually take them directly to processors. That recycling is credited to the residential or commercial sector, not self-haul.
- The self-haul stream includes several large, unique customers. Such customers require targeted assessment and education to discover their potential to increase recycling. As noted, increased recycling will shift the recycling "credit" to the commercial or residential sector. However, this nuance of measurement doesn't affect program planning. Another way to gauge progress in this sector would be a decline in the amount of recyclables in garbage as assessed by periodic waste sorts.
- Seattle does not require businesses to subscribe to garbage service. For self-haul, it wouldn't always make sense. These businesses often have waste as a by-product of their enterprise on others' property (for example, landscapers, roofers and remodelers). SPU provides all services to these customers at the transfer stations. By comparison, other self-haulers have collection service at their home or business.
- Others self haul because they have more material than will fit into the service they have at their home or business. Lack of awareness of existing services for

"extras" and bulky items causes unneeded trips to the stations and extra customer costs.

- Home remodelers and small contractors often find it more convenient to use the city transfer stations rather than private transfer stations for loads containing construction waste. This is the case even though the tip fee for garbage at Seattle transfer stations is much higher than at private stations. The private transfer stations also are not set up for handling many small vehicle loads and often require a credit card for payment. Programs to increase recycling from this group of customers would need to occur at the city-owned stations.
- Communication challenges in this sector are as diverse as the customer base. Customers range from home-owners, multi-family dwellers, small-to-large businesses, and large institutions. Outreach must be tailored to each.

### Commercial Sector

Commercial sector recycling reached 58.9% in 2010. (Table 4-9). About 70% was potentially recyclable, based on 2009 recycling analysis. This is the largest sector. A percentage gain in the commercial sector carries the most impact in reaching Seattle's recycling goal.

**Table 4-9**  
**Potentially Recyclable Material Disposed 2009 in Commercial Sector**

| Material                            | Tons   | Diversion Rate |
|-------------------------------------|--------|----------------|
| Organics - Food & Compostable Paper | 64,000 | 51%            |
| Recyclable Paper                    | 23,000 | 79%            |
| Other Recyclables                   | 11,000 | 47%            |
| Plastic Film                        | 8,000  | 5%             |

The largest remaining targets include food and compostable paper, recyclable paper and cardboard, traditional recyclables, and plastics. Paper and cardboard are already banned from disposal. Seattle is currently developing a targeted program for plastic film. The program could be as simple as connecting businesses that have large volumes of discarded film with recyclers who want it.

The commercial sector is as diverse as the businesses operating in Seattle. It presents its own set of programming challenges:

- The link between who pays and who puts materials in the garbage or recycling can be very direct. Or the link is remote (as in the case of large businesses with many employees). And garbage bills tend to be small compared to other business costs.
- Since most businesses subscribe to garbage service, and they must use city-contract collectors when they do, SPU knows where to reach them for education outreach. In 2009, the commercial sector had 8,351 accounts.
- The types of waste generated and physical characteristics of businesses are widely varied. There is a corresponding variability in their ability to respond to

new requirements. Providing technical assistance is highly valuable to making gains in this sector.

- Enforcing disposal bans takes more effort because it's hard to see into large dumpsters and compactors.

## Event Recycling

Event recycling is the responsibility of those holding the event. State law requires recycling at large events ("official gathering" RCW 70.93.093). The law specifically addresses beverage container recycling. Vendors may manage the recycling themselves or pay to have it done.

Seattle has gone a step further by requiring recyclable or compostable packaging for all quick-serve food as of 2010. Compliance has ramped up. Compost bins are now provided at many public events. See Chapter 3, Waste Prevention, for more detail.

In addition to boosting recycling, both provisions help reduce litter. See Chapter 5, Other Seattle Solid Waste Programs, section 5.3 for more detail on public place litter management.

## City of Seattle Recycling

While the City of Seattle is responsible for planning and managing Seattle's solid waste, it is also a major generator and should be a leader in waste reduction and recycling. The city pays to manage its garbage and recycling just like other businesses and institutions.

All city offices have had convenient recycling containers for many years and recently brought in food waste composting. See Chapter 3, Waste Prevention, for detail.

### 4.3.3 Current Recycling Programs and Practices

Currently operating recycling programs and practices are described in the following sections of the Plan:

- Chapter 3, Waste Prevention
- [Section 4.2 Collection](#)
- [Section 4.4 Transfer Facilities](#)
- [Section 4.5 Processing and Disposal](#)
- Chapter 5, Other Seattle Solid Waste Programs, section 5.3, Clean City Programs
- Chapter 6, Administration and Financing, section 6.2, Education Programs

### 4.3.4 Recycling Alternatives and Recommendations

This section describes the development of recycling program alternatives. Recommendations are based on analysis of the alternatives.

#### Recycling Programs Analysis

SPU has developed several potential new recycling programs through a step-wise approach. Staff analyzed which currently recyclable materials are still being disposed of by the different

sectors and program directives from the *Zero Waste Resolution*. We then prepared program factors to feed SPU's Recycling Potential Assessment (RPA) model including:

- Descriptions of how programs would work including targeted sectors and materials
- Cost to implement
- Estimated participation and efficiency



### **Recycling Potential Assessment (RPA) Model**

The RPA model forecasts potential increased recycling from packages of programs (scenarios). The model starts with an econometric forecast of waste generation based on demographic and economic forecasts. It uses data from the waste composition studies about what is left in the waste stream. The model can calculate new recycling diversion based on assumptions about how effective each program could be for each targeted material.

RPA results include forecasted recycling rates for the planning period, as well as the costs and avoided costs of each program and scenario. The planning period used in the RPA is 2010 through 2030.

The RPA model includes a cost module that calculates new or incremental costs associated with implementing and running each program. Examples of costs are new staff, customer education, and equipment and contractor payments. In addition, the model calculates the savings from each of the programs when the new tons recycled do not have to be collected, transferred and disposed. This is called the *avoided cost*, or the financial benefit, to recycling.

SPU conducted more economic analysis on the environmental benefits associated with recycling. Those results show the net annual value of the environmental benefits to be millions of dollars above and beyond direct financial impacts. The analysis is explained in Appendix D, Recycling Potential Assessment Model.

## Status Quo Programs

The first scenario analyzed by the RPA was the base-case (status quo) set of programs (Table 4-10). Status quo includes long-standing programs and three recent programs.

**Table 4-10**  
**Status Quo Scenario Recycling Programs**

| Program                                               | Description                                                                                                                                                     |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Long-Standing</b>                                  |                                                                                                                                                                 |
| Residential Recycling Collection                      | Recycling collection from single- and multi-family residences                                                                                                   |
| Residential Organics Collection                       | Yard waste and food waste collection from single- and multi-family residences                                                                                   |
| Grasscycling                                          | Grass clippings returned to the lawn by the use of mulching mowers                                                                                              |
| Backyard Organics Composting                          | Backyard composting of yard and food waste at single-family residences                                                                                          |
| Self-Haul Yard Waste                                  | Yard waste self hauled and dropped at city transfer stations as "clean green"                                                                                   |
| Self-Haul Recycling Drop Off                          | Recycling self hauled and dropped in recycling bins at city transfer stations                                                                                   |
| Commercial Recycling                                  | Recycling and organics collected from commercial businesses by city-contracted and private haulers                                                              |
| <b>Recently Begun or Established</b>                  |                                                                                                                                                                 |
| Recyclable or Compostable Food Container              | All quick-serve food packaging required to be recyclable or compostable (or reusable), starting mid-2010, and recycling and compost containers must be provided |
| Multi-family Universal Organics Service               | All multi-family buildings required to provide organics service to tenants, starting late 2011                                                                  |
| Asphalt Paving, Concrete, Bricks Banned from Disposal | Asphalt paving, concrete and bricks are banned from disposal in the garbage (must be recycled) implementation starts 2012                                       |

Even with the addition of the three newest programs, the RPA modeling of the status quo programs showed that Seattle would not reach the existing recycling goals of 60% by 2012 and 70% by 2025 (Table 4-11).

**Table 4-11**  
**Status Quo Scenario Recycling Rate Projections**

| Year        | Single-Family | Multi-Family | Self-Haul | Commercial | Overall |
|-------------|---------------|--------------|-----------|------------|---------|
| 2009 Actual | 68.7%         | 27.0%        | 16.7%     | 54.9%      | 51.1%   |
| 2010 Actual | 70.3%         | 29.6%        | 13.5%     | 58.9%      | 53.7%   |
| 2012        | 70.2%         | 30.4%        | 17.6%     | 56.3%      | 52.1%   |
| 2015        | 71.5%         | 38.2%        | 19.5%     | 58.2%      | 54.0%   |
| 2020        | 71.7%         | 41.2%        | 19.6%     | 58.4%      | 54.1%   |
| 2025        | 71.7%         | 41.3%        | 19.6%     | 58.4%      | 53.9%   |
| 2030        | 71.7%         | 41.3%        | 19.6%     | 58.4%      | 53.9%   |

## New Programs

SPU used the RPA to model several programs for inclusion in its recycling programs (Table 4-12). Most of these programs would affect SPU's current collection programs.

The RPA modeled new bans on MSW—the targeted materials would no longer be allowed in residential, self-haul or commercial garbage. Chapter 5 presents the proposed material bans for construction waste disposal.

**Table 4-12  
Modeled New Programs**

| <b>RPA #</b> | <b>Program</b>                               | <b>Description</b>                                                                                                                                  | <b>Target Sectors*</b> | <b>Target Materials</b>                | <b>System Stage</b>          |
|--------------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------------------------------------|------------------------------|
| 12           | Market development for textiles              | Develop end-markets (worn clothing; other household textiles add to recycling collection)                                                           | SF, MF                 | Textiles                               | Waste Prevention, Collection |
| 14           | Multi-family organic waste ban               | Food and yard waste not allowed in garbage                                                                                                          | MF                     | Food, yard waste, non-recyclable paper | Collection                   |
| 15           | Pet waste and diapers composting             | Fourth bin provided for collection, material sent to appropriate treatment                                                                          | SF, MF                 | Pet waste, diapers                     | Collection, Processing       |
| 16           | Plastic bag ban (from stores)                | Stores not allowed to give plastic carry bags to customers                                                                                          | SF, MF                 | Plastic bags                           | Waste Prevention             |
| 17           | Every other week garbage collection          | Switch garbage pick up to every other week. Keep organics picked up weekly                                                                          | SF                     | Food, yard waste, recyclables          | Collection                   |
| 18           | Single-family organics ban                   | Food and yard waste not allowed in the garbage                                                                                                      | SF                     | Food, yard waste, non-recyclable paper | Collection                   |
| 19           | Increase enforcement of residential bans     | Expand inspector enforcement of existing disposal bans                                                                                              | SF, MF                 | "Curb" recyclables                     | Collection                   |
| 20           | Reusable bag campaign                        | Promote reusable shopping bags in collaboration with retail stores                                                                                  | SF, MF                 | Plastic bags                           | Waste Prevention             |
| 26           | Asphalt roofing shingles ban                 | Asphalt roofing shingles not allowed in garbage                                                                                                     | SH                     | Asphalt (tear off) roofing shingles    | Transfer                     |
| 28           | Floor sorting C&D loads >90%                 | Separately drop, sort, and recycle self-haul loads that look like all C&D debris                                                                    | SH                     | Recyclable C&D materials               | Transfer                     |
| 29           | Floor sorting C&D loads > 50%                | Separately drop, sort, and recycle self-haul loads that look like at least half C&D debris                                                          | SH                     | Recyclable C&D materials               | Transfer                     |
| 32           | Commercial organics ban                      | Food and yard waste not allowed in garbage                                                                                                          | Com                    | Food, yard waste, non-recyclable paper | Collection                   |
| 36           | Carpet take-back program                     | Work to encourage more private recycling capacity in region; more end markets for materials; separation best practices, and take-back opportunities | SH, Com                | Carpet                                 | Waste Prevention             |
| 37           | Enhance commercial organics outreach         | SPU devotes more resources to persuade more businesses to sign up for organics service                                                              | Com                    | Food waste                             | Collection                   |
| 38           | Increase enforcement of commercial paper ban | Expand inspector enforcement of existing disposal bans                                                                                              | Com                    | Cardboard, office paper                | Collection                   |
| 39           | Extend commercial ban to additional material | Add to list of recyclable materials not allowed in garbage (currently cardboard and office paper)                                                   | Com                    | Plastics, cans, glass, aluminum        | Collection                   |
| 41           | Restore education                            | Restore waste reduction and recycling education, Resource Venture, to pre-recession levels                                                          | All                    | All recyclables                        | All                          |



| RPA # | Program                            | Description                                                                                                                                        | Target Sectors* | Target Materials                                 | System Stage               |
|-------|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------------------------------------|----------------------------|
| 42    | Paint product stewardship solution | Work toward state legislation for manufacturer funded collection system for unwanted latex paint                                                   | All             | Latex paint                                      | Waste Prevention           |
| 43    | New education                      | SH: Resource Venture work with large self-haulers to increase diversion<br>Small Business: Increase awareness of free cart-based recycling service | SH, Com         | All recyclables, trip reduction                  | Collection, Transfer       |
| 44    | Junk mail, yellow pages opt-out    | Provide means for citizens to stop receiving unwanted yellow pages phone books and unwanted catalogues. Implemented 2011                           | SF, MF          | Paper                                            | Waste Prevention           |
| 45    | Clean wood ban                     | Unpainted and untreated wood not allowed in garbage                                                                                                | SH, Com         | Clean wood                                       | Collection, Transfer       |
| 46    | C&D in commercial ban              | Recyclable C&D debris not allowed in garbage. Supersedes prior individual C&D material bans                                                        | Com             | Recyclable C&D materials                         | Collection                 |
| 50    | Plastic film ban                   | Plastic film, such as pallet wrap, not allowed in garbage                                                                                          | Com             | Plastic film                                     | Collection                 |
| 51    | Pre-scale recycling                | Increased drop off recycling convenience at rebuilt city stations by locating drop point before scales                                             | SH              | All recyclables allowed for drop off at stations | Transfer                   |
| 52    | Divert reusables from self-haul    | Contract with private reuse business for pre-scale salvage. SPU provides storage at rebuilt south station.                                         | SH              | Construction debris, other                       | Waste Prevention, Transfer |
| 411   | Super education if no bans         | Add even more resources to outreach and education if no bans pursued                                                                               | All             | All                                              | All                        |

\*Com = commercial, MF = multi-family, SF = single-family, SH = self-haul,

## Programs not Modeled

Some programs from the *Zero Waste* study were not modeled but may be reconsidered:

- **Expand alley collection in business districts** — This program is already active in parts of Seattle. Near-term expansion is likely to be minor in scale. The main purpose of this program is not to increase recycling but rather to reduce uncivil behavior in alleys.
- **Expand C&D debris drop sites** — This program idea was dropped because siting new drop sites in Seattle would be very difficult. Capacity is good at the existing facilities in the area.
- **Rate structure review for waste collection** — This program idea from the *Zero Waste Resolution* would have altered the rate (fee) structure for the commercial sector. The change would create a "heavy rate" (higher dumpster fees) for businesses that dispose of more food in their garbage. It was dropped because it would take a long time to figure out how to apply it. A ban approach would be more promising.
- **Beverage container deposit system** — This would be done through a change to state law. SPU will support working toward such legislation when there is a broader move to do so.

The modeling described above resulted in the new program recommendations that follow.

## Recommendations

The recommendations to increase recycling include keeping existing programs, implementing new programs in a phased manner, and adjusting recycling goal years to align with projected achievement.

### Continue Existing Recycling Programs and Policies

The recycling recommendations in this plan assume status quo programs continue to operate as is. They are the base set of programs on which the future programs build.

### Implement Newly Recommended Programs

The recommended set of new recycling programs would be implemented starting now through 2020 (Table 4-13). The schedule balances a forceful push toward the recycling goals and a viable pace.

**Table 4-13  
Recommended Recycling Programs Implementation Schedule**

| Start | Program                                                                   | Single-Family | Multi-Family | Self-Haul | Commercial |
|-------|---------------------------------------------------------------------------|---------------|--------------|-----------|------------|
| 2010  | Recyclable or compostable container food program (actual 2011)            |               |              |           | ✓          |
| 2012  | Multi-family Universal Organics Service*                                  |               | ✓            |           |            |
|       | Increase Enforcement Residential Bans                                     | ✓             | ✓            |           |            |
|       | Carpet Take - Back                                                        |               |              | ✓         | ✓          |
|       | Increase Enforcement Commercial Paper Ban                                 |               |              |           | ✓          |
|       | Junk Mail, Yellow Pages Opt Out*                                          | ✓             | ✓            |           |            |
| 2013  | Ban of Asphalt Paving, Concrete, Bricks*                                  |               |              | ✓         | ✓          |
|       | Floor Sorting of C&D Loads (>50%)                                         |               |              | ✓         |            |
|       | Enhanced Commercial Organics Outreach                                     |               |              |           | ✓          |
|       | New Education - small business free recycle carts, audit top self-haulers |               |              | ✓         | ✓          |
|       | Restore Education for All Sectors                                         | ✓             | ✓            | ✓         | ✓          |
| 2014  | Single-Family Organics Ban                                                | ✓             |              |           |            |
|       | Reusable bag campaign*                                                    | ✓             | ✓            |           |            |
|       | Asphalt Roofing Shingles Ban                                              |               |              | ✓         |            |
|       | Extend Commercial Ban to Additional Material                              |               |              |           | ✓          |
|       | Clean Wood Ban                                                            |               |              | ✓         | ✓          |
|       | Plastic Film Ban                                                          |               |              | ✓         | ✓          |
| 2015  | Multi-family Organic Waste Ban                                            |               | ✓            |           |            |
|       | Plastic Bag Ban (from stores)*                                            | ✓             | ✓            |           |            |
|       | Paint Product Stewardship Solution                                        | ✓             | ✓            | ✓         | ✓          |
|       | Divert Reusables From Self-Haul                                           |               |              | ✓         |            |
| 2016  | Market Development for Textiles                                           | ✓             | ✓            |           |            |
|       | Commercial Organics Ban                                                   |               |              |           | ✓          |
|       | Pre-scale Recycling                                                       |               |              | ✓         |            |
| 2017  | C&D in Commercial Ban                                                     |               |              |           | ✓          |
| 2020  | Pet Waste & Diapers Composting                                            | ✓             | ✓            |           |            |

\*Actual earlier start year: Multi-family universal organics service 4Q2011; Junk mail, yellow pages opt-out 2011; Asphalt, bricks, concrete paving ban legislation already passed and effective 2012; Reusable bag campaign 2012; Plastic bag ban 2012

✓ = Projected implementation

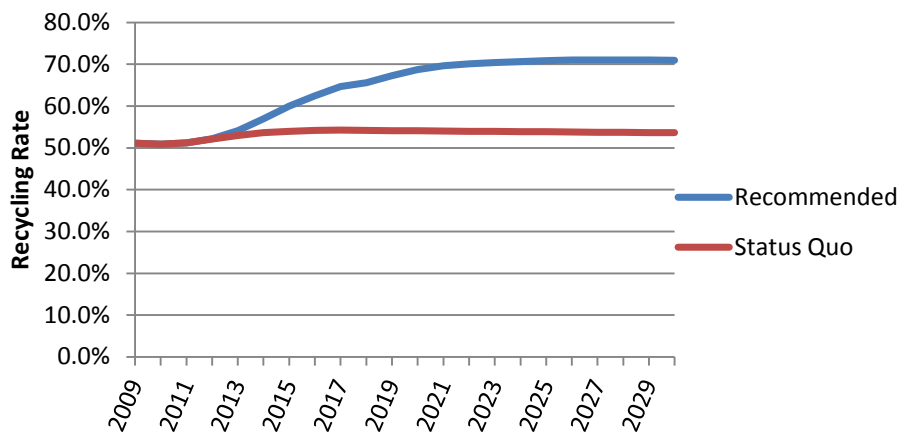
RPA projections estimate the recommended set of recycling programs will move Seattle's overall recycling rate to 60% by 2015, 3 years later than the 2012 goal set in the *Zero Waste Resolution* (Table 4-14). However, Seattle would achieve the 70% goal 3 years sooner than the resolution's 2025 goal, then rise slightly higher than the goal.

**Table 4-14**  
**Recommended Programs Recycling Rate Projections**

| Year        | Single-Family | Multi-Family | Self-Haul | Commercial | Overall |
|-------------|---------------|--------------|-----------|------------|---------|
| 2009 Actual | 68.7%         | 27.0%        | 16.7%     | 54.9%      | 51.1%   |
| 2010 Actual | 70.3%         | 29.6%        | 13.5%     | 58.9%      | 53.7%   |
| 2012        | 70.5%         | 31.0%        | 16.7%     | 56.5%      | 52.2%   |
| 2015        | 75.4%         | 42.5%        | 32.9%     | 63.4%      | 60.0%   |
| 2020        | 81.9%         | 53.0%        | 45.5%     | 72.3%      | 68.7%   |
| 2025        | 84.8%         | 55.3%        | 45.6%     | 75.1%      | 70.9%   |
| 2030        | 85.8%         | 55.7%        | 45.6%     | 75.1%      | 71.0%   |

By 2025, the recycling rate will be 17% higher than it would be if the city continues with status quo programs only (Figure 4-9).

**Figure 4-9**  
**Recycling Rate Status Quo versus Recommended**



Seattle will save a sizable amount from the new programs. Total net present value for the entire package of recommendations is \$19,103,133, which means overall savings through 2030. See Chapter 6, Administration and Financing, section 6.3 for detail on the financial impacts of the recommendations.

### Revise Recycling Goals to 60% by 2015 and 70% by 2022

Considering the current recycling rate, and resource constraints from the recession, it does not seem likely Seattle will achieve 60% by the year 2012. RPA modeling indicates that adding the recommended actions to existing programs will get Seattle to 60% by the year 2015. Therefore, this Plan recommends adopting the new year, 2015, for the 60% recycling goal.

On the other hand, modeling for the recommended package indicates Seattle will get to 70% recycling by the year 2022. This is 3 years earlier than the 70% by 2025 goal set in the *Zero Waste Resolution*. Therefore, this Plan recommends moving up the 70% recycling goal to the year 2022.

### 4.3.5 Monitoring and Performance Measurement

The City of Seattle monitors achievement toward the recycling rate through the SPU annual Recycling Rate Report. The report presents sector progress as well as overall progress. It also discusses program actions and results for the year reported, as well as near-term planned actions. Chapter 2, *Seattle Solid Waste Trends*, covers the methodology used to prepare the report.

## 4.4 TRANSFER FACILITIES

The purpose of transfer facilities is to consolidate collected solid waste materials and route them to their next destination.

The City of Seattle owns and operates two transfer stations. They were built in the 1960s when waste shipment began to sites outside the city (Kent Highlands and Midway landfills). Before that, waste was disposed of in landfills within the city limits. But by the early 1960s, landfill space in Seattle ran out and the need for a large out-of-town landfill became apparent. Collection trucks couldn't efficiently travel that far, so the city needed a way to consolidate, or transfer, into larger loads for transport to the landfill. The city's stations also provide drop-off services for self-haul customers.

The city's transfer stations were renamed "recycling and disposal stations" in the 1990s, reflecting a new emphasis on their role in recycling in addition to transferring waste for disposal. They are now called the North Recycling and Disposal Station (NRDS) and the South Recycling and Disposal Station (SRDS). See Figure 4-2 for the [locations of Seattle solid waste facilities](#). The rebuilt stations will revert to the original naming: South Transfer Station (STS) and North Transfer Station (NTS).

In addition to city-owned owned and operated solid waste facilities, two private transfer stations supplement city facilities. See the list of facilities in Table 4-1.

SPU also operates two household hazardous waste (HHW) collection facilities. One is located at the SRDS and the other at a separate location near Aurora Avenue and 125th NE. Both HHW collection facilities are operated on behalf of the Local Hazardous Waste Management Plan (LHWMP). See Chapter 5, *Other Seattle Solid Waste Programs*, section 5.4 for detail on the management of moderate risk waste through the LHWMP in Seattle.

### 4.4.1 Transfer Facilities Recommendations from 1998 Plan and 2004 Amendment

This section summarizes the previous plan's recommendations on transfer facilities and their status (Table 4-15).

## Status of Past Recommendations

**Table 4-15**  
**Past Recommendations for Seattle Transfer Facilities**

| Past Recommendations                                                                                                                                                                                     | Status                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1998 Plan</b>                                                                                                                                                                                         |                                                                                                                                                                                                                                      |
| Support a flexible approach to selecting efficient transfer points for garbage and organic wastes                                                                                                        | Done<br>Solid waste transfer program evaluation completed 2006. Distribution of material tonnages between city/private transfer stations set to maximize system efficiency                                                           |
| Continue to manage recycling and disposal (transfer) stations to minimize neighborhood impacts                                                                                                           | Since 2006, good achievement of goal to empty both pits at end of day, 98% of time.                                                                                                                                                  |
| Make capital improvements at city's existing recycling and disposal stations                                                                                                                             | Ongoing                                                                                                                                                                                                                              |
| Build a Recycling Center at South Recycling and Disposal Station (SRDS), and consider acquiring property adjacent to North Recycling and Disposal Station (NRDS) for station redevelopment and expansion | SRDS Recycling Center still pending<br>Additional property purchased next to NRDS                                                                                                                                                    |
| <b>2004 Amendment</b>                                                                                                                                                                                    |                                                                                                                                                                                                                                      |
| Prepare standard operating procedures and best management practices that define optimum services and safety for public, employees, and environment                                                       | Revised Stations Operations Manual 2007                                                                                                                                                                                              |
| Acquire additional equipment capacity to enable more efficient transportation of commodities                                                                                                             | Ongoing<br>Equipment inventory now meets needs                                                                                                                                                                                       |
| Revise layout and operation procedures for metal collection, transfer, and transportation                                                                                                                | Installed metal loading bunker at SRDS to protect building structure 2008                                                                                                                                                            |
| Reduce customers waits by altering traffic patterns or improving other procedures                                                                                                                        | Tare weights used for collection contractors begun 2005. SRDS 2007 separated household hazardous waste (HHW) customers from station traffic, easing wait times and congestion. Since 2010 live cameras show wait line on SPU website |
| Develop new signage for guiding customers                                                                                                                                                                | Completed 2008                                                                                                                                                                                                                       |
| Consider relocation of recycling containers, and separate access for recycling                                                                                                                           | Pilot completed 2009<br>Included in design for new South Transfer Station (STS) and is design goal for new North Transfer Station (NTS)                                                                                              |
| Install misting system at SRDS                                                                                                                                                                           | Done 2007                                                                                                                                                                                                                            |
| Install warming stations for floor staff                                                                                                                                                                 | Done 2007                                                                                                                                                                                                                            |
| Improve the light level in the stations                                                                                                                                                                  | Lamps changed out 2009                                                                                                                                                                                                               |
| Offer additional customer service training to stations staff                                                                                                                                             | Training ongoing<br>Ongoing customer satisfaction surveys show high level of satisfaction                                                                                                                                            |
| Direct contractor-collected garbage and yard waste between city or private stations for maximum system-wide efficiency                                                                                   | Ongoing                                                                                                                                                                                                                              |
| Upgrade service gates for remote open and close by truck drivers                                                                                                                                         | Done 2008                                                                                                                                                                                                                            |

| Past Recommendations                                                                                                                      | Status                                                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Replace scale house security cameras and recording systems                                                                                | Completed 2009                                                                                                                                                   |
| Replace scale house computers and software                                                                                                | Done 2009, with enhanced reporting and automated operation for collection contractors                                                                            |
| Repairs and equipment replacement as needed                                                                                               | Replaced incoming scale deck SRDS<br>Upgraded electrical systems both stations.<br>Repaved SRDS yard. Replaced old crew building. Constructed maintenance canopy |
| Proceed with environmental review for transfer station projects as appropriate under the Washington State Environmental Policy Act (SEPA) | Done                                                                                                                                                             |
| Implementation of the Solid Waste Facilities Master Plan per anticipated schedule                                                         | 2007 Resolution 30990 indefinitely postponed intermodal and directed SPU to proceed with rebuilding NRDS and SRDS. New STS construction started 2009             |

## Other Progress since 2004

### Station Operations

In 2007, SPU reconfigured drainage at SRDS to direct runoff from the trailer parking area to a sanitary sewer. This action was in response to public health concerns about stormwater drainage from the site.

Also in 2007, we added closed circuit cameras to the stations, allowing station supervisors to better assess needs and allocate staff more efficiently. For improving accountability and use of overtime, supervisors also now file daily reports.

In 2008, transfer station disposal rates were increased to cover the actual cost of service. The increase allowed more environmentally friendly options, such as SPU's bulky item pickup service, which is more attractive on a customer out-of-pocket basis.

### Master Facilities Plan

As solid waste management has evolved, the functions of the city's NRDS and SRDS expanded dramatically, yet the basic buildings and facilities did not change. Today the stations accept more than 10 categories of separated material—from garbage to wood waste to vehicle batteries.

Typically, transfer facilities are designed to last for 30 years. Seattle's stations have exceeded this life-span, despite limited maintenance. Overall, they are outmoded and no longer adequately handle current volumes of materials and customers.

A [draft Solid Waste Facilities Master Plan](#) was prepared to address capital needs. It includes a new Intermodal facility and improvements to the existing transfer stations. In addition, the plan addressed ways to ensure that the city can continue to transfer waste and recyclables out of Seattle. The plan included analysis of dozens of facility options using a variety of criteria. Criteria included cost, community, and environmental impacts, health and safety, and consistency with the City of Seattle 1998 Solid Waste Management Plan and 2004 Amendment, and other priorities.

The draft Solid Waste Facilities Master Plan recommended upgrading waste management facilities in Seattle as follows:

- **Improve and expand both City of Seattle transfer stations.** This would increase the size of the NRDS and SRDS by adding property at each station. The improvements would increase customer service and reduce adverse environmental impacts. And they would expand recycling and recovery of reusable materials.
- **Build an intermodal.** This would be a new dedicated solid waste transfer facility at a railhead in South Seattle. It would ensure that the city has a reliable, environmentally sound and economical way to ship waste out of Seattle.

### Reconstruction of Transfer Stations

In 2007, the City Council decided not to build the proposed intermodal facility, and to proceed with improvements to NRDS and SRDS as contemplated in the 1998 Solid Waste Management Plan. Because of the need for continuous operation of recycling and disposal facilities, the approved reconstruction of NRDS and SRDS is being implemented in three stages.

**Stage One: Construct New South Transfer Station.** The first stage (Phase 1) involves constructing a new facility to replace the existing SRDS on a newly acquired 9.12 acre site (bus yard property). The property is diagonally adjacent to the north of the existing SRDS, north of S. Kenyon Street. The projected design and construction period for the first phase is about 3 years. Because of soil contamination and existing buildings on the property, soil remediation and site preparation had to be conducted before construction. Facility construction began late in 2010. The new facility will be called the *South Transfer Station (STS)*. At the end of this phase, the city will temporarily have three stations until demolition starts at NRDS.

**Stage Two: Reconstruct North Transfer Station.** The second stage will be reconstruction of the NRDS. The reconstructed facility will be called the *North Transfer Station (NTS)*. The project will occur at the existing NRDS site and associated recycling area in the Wallingford neighborhood at 1350 N 34th Street, and the acquired property to the east at 1550 N 34th Street. Construction will not start until the STS Phase 1 facility is operational. This arrangement provides another facility for customers while the north facility is closed during reconstruction. During reconstruction of the north facility, solid waste, recycling, yard waste and other materials, will be temporarily redirected to SRDS.

**Stage Three: Demolish SRDS.** Finally, when STS is operational and the new North Transfer Station opens, demolition of the current SRDS structures will start (sometimes called Phase 2), on SRDS's 11.37-acre parcel located to the south of South Kenyon Street.

Plans to redevelop the former SRDS site were postponed while SPU focuses on the STS and NTS projects. Recycling at the STS will be located inside the new building, similar to the arrangement at the old SRDS. When SPU begins redevelopment of the former SRDS site, we may include relocated recycling drop-off, a reuse area, and a new household hazardous waste drop-off facility.

Phase 2 activities are scheduled to be integrated with remediation of the underlying landfill (Table 4-16).



**Table 4-16  
Seattle Transfer Station Construction Schedule**

| Year        | North            | South               |
|-------------|------------------|---------------------|
| 2010 – 2012 |                  | STS Construction    |
| 2013        | NRDS Demolition  |                     |
| 2013 – 2014 | NTS Construction |                     |
| 2015        |                  | SRDS Demolition     |
| 2016 – 2017 |                  | SRDS Reconstruction |

## 4.4.2 Transfer Facilities Planning Issues

Recycling goals, operational issues, and moving forward on capital improvements characterize the issues related to transfer facility planning.

### Keeping Existing Stations Functional until Rebuilt

During preparation of the Solid Waste Facilities Master Plan, it became apparent that some level of ongoing capital program was needed at the NRDS and SRDS. From 2004 to the present, a miscellaneous station improvements project has been used to fund necessary capital improvements at the NRDS and SRDS. Improvements range from replacement of a failing scale deck to resurfacing the asphalt at SRDS. These smaller projects are required to maintain safety and reliability at the stations while they are still in use.

### Transitioning to New Facilities

The new flat floor stations will operate very differently from the existing stations. Training will begin in 2011 to prepare staff for this change. Training will be based on the operations plan for STS (under development). The equipment in the stations will be more advanced for better electrical efficiency. Maintenance staff will need training to properly operate and maintain it. Staffing plans for the transitional periods are complete. All heavy equipment purchases are now compatible with the new stations.

### The 60% Recycling Goal

The new stations will encourage more recycling by increasing the convenience of the recycling and reusables drop-off areas. Drop-off services will be available to self-haul customers before they enter the station. This layout makes it possible for self-haulers with just recyclables to avoid crossing the scales and main station. Although it is unclear at this time whether this will be feasible at NTS, every effort will be made to make recycling drop off within the station as convenient as possible.

In addition, both stations will have flat floors to allow heavy equipment to sort large recyclable items. Flat floors are also more flexible and allow separating new waste streams in the future. For example, at STS SPU will consider sorting self-hauled loads of comingled C&D.

### The Alaskan Way Viaduct Replacement Project

The Alaskan Way Viaduct Replacement Project will temporarily disrupt a thoroughfare heavily used by collectors and city hauling. Current estimates say the viaduct will close for construction for 4 years. When the viaduct is closed for safety, or during replacement, the impact to solid

waste operations will be substantial. Currently, 120,000 tons of garbage and 550 trailer loads of recycled metal from the NRDS are moved through this corridor each year. Previous experience with viaduct closures have given us some data on increased hauling times and the additional effort required to maintain service levels. Each round trip through the corridor will increase by about an hour.

## **Equitable Service Goals**

The transfer stations are a critical part of the Seattle's solid waste system. Allotting transfer station capacity between the north and south ends of the city improves collection efficiency and creates convenient access for self-haul customers. With a two station system, the effect of solid waste activities is not concentrated in any one area.

## **Balancing Customer Service and Trip Reduction**

While customer service goals are important, SPU also has a goal to encourage a decrease in self-haul vehicle trips, to minimize traffic into the stations' surrounding neighborhoods.

## **Maintaining Progress on Facility Rebuilds**

The STS is under construction. SPU is also working with the NTS stakeholder group to define a facility that will serve our customers and be a good neighbor. Resolution of uncertainties at the NTS is critical to the schedule of SRDS and long-range operational planning.

## **Planning New Functions for SRDS Site**

Current planning assumptions for the SRDS site (after the old structures are gone) include a recycling facility, reuse collection and sales, household hazardous waste collection and ancillary trailer parking for the new STS. The final design for this site will also reflect additional program needs identified over the next 3 years. Some of these needs will be market driven. For example, as carpet recycling options come into use, they will require programmed space to take advantage of this waste diversion opportunity.

## **Shifting Capital Planning**

Capital planning shifts to major maintenance and equipment replacement after the rebuilds are done. The new facilities are designed for a 50-year service life. Once constructed, major capital replacement projects, including compactor replacement, floor resurfacing and facility roof replacement will need to be planned. If the private transfer stations stop accepting waste, maintaining the city's transfer facilities will become even more critical to ensure adequate transfer capacity in Seattle.

### **4.4.3 Current Transfer Facility Programs and Practices**

#### **Transfer Station Operations**

The city's transfer facilities perform the same basic functions they have since they were built. They receive discards and send them on to their next destination. They now serve a wide variety of vehicles and customers, and receive a range of discarded materials that include garbage,

recyclables and compostables. All materials are loaded into transfer containers and shipped to their next destination.

The stations play an important role in accepting materials unsuitable for curbside collection. Residents with large, bulky items or excess quantities can bring these materials to the stations for recycling or disposal. The stations also serve businesses that choose to self-haul their waste and recyclable materials.



Primary service levels have been adopted for transfer stations:

- Stations are open and available 362 days/year from 8 AM to 5:30 PM to our self-haul and commercial customers
- All garbage and organics are loaded into shipping containers or trailers (organics) at the end of each work day

### Transfer Station Trends

Collection contractor trucks bring in 2.5 times as many tons as self-haul customers, yet they are only 14% of total trips. Tables 4-17 and 4-18 show the number of trips and tons of material transferred through the NRDS and SRDS.

**Table 4-17**  
**Transfer Services for Contractor-Collected Garbage and Yard Debris to NRDS and SRDS in 2010**

| Waste Type          | NRDS          |                | SRDS          |                | Total         |                |
|---------------------|---------------|----------------|---------------|----------------|---------------|----------------|
|                     | Trips         | Tons           | Trips         | Tons           | Trips         | Tons           |
| Residential Garbage | 13,355        | 46,166         | 13,155        | 62,662         | 26,470        | 108,828        |
| Commercial Garbage  | 2,557         | 47,476         | 3,594         | 32,410         | 6,151         | 79,886         |
| Yard Debris         | 4,788         | 28,724         | 2,212         | 11,262         | 7,000         | 39,986         |
| <b>Total</b>        | <b>20,700</b> | <b>122,366</b> | <b>18,921</b> | <b>106,334</b> | <b>39,621</b> | <b>228,700</b> |

**Table 4-18**  
**Self-Haul Service Provided by NRDS and SRDS in 2010**

| Waste Type                | NRDS           |               | SRDS           |               | Total          |               |
|---------------------------|----------------|---------------|----------------|---------------|----------------|---------------|
|                           | Trips          | Tons          | Trips          | Tons          | Trips          | Tons          |
| Self-Haul Garbage         | 95,459         | 37,923        | 73,384         | 41,369        | 168,843        | 79,292        |
| Self-Haul Yard Debris     | 16,342         | 3,715         | 15,915         | 3,966         | 32,257         | 76,82         |
| Self-Haul Wood Waste      | 1,026          | 344           | 969            | 465           | 1,995          | 808           |
| Other Self-Haul Recycling | 26,545         | 2,415         | 15,971         | 1,733         | 42,516         | 4,149         |
| <b>Total</b>              | <b>139,372</b> | <b>44,397</b> | <b>106,236</b> | <b>47,534</b> | <b>245,611</b> | <b>91,931</b> |

One of the primary challenges at the recycling and disposal stations is managing the volume of self-haul customers. Although handling a high volume of customers with small loads is relatively costly, providing convenient self-haul services for residents and businesses is an important SPU objective. SPU wants to encourage self-haul customers to make more use of the more efficient curbside services, which are usually less costly.

In 2009, about 60% of contractor-collected organics was delivered to the NRDS and SRDS stations. The remaining 40% was delivered to Waste Management's Eastmont transfer facility. About 75% of municipal solid waste (MSW) was transferred at the city's recycling and disposal stations and the remaining 25% (primarily commercial garbage) was transferred at Eastmont.

Waste Management's Eastmont station transfers MSW and organics under contract to the city. Republic (formerly Allied Waste) operates the Third and Lander private transfer station and currently transfers a minimal amount of city MSW. This material is the rejected portion of recycled materials (contamination) sorted under city contract. All public and private solid waste facilities are permitted and regulated under the authority of Public Health - Seattle and King County.

### **Accepted Materials**

Materials currently accepted at the city-owned stations include:

- Garbage
- Organics (yard, food, clean wood)
- Recycling (curb recyclables accepted at the processor: glass, mixed paper, plastics, cans, etc. Also included are large appliances and other bulky metal items not suitable for curb-side collection)
- Special wastes (properly prepared or pre-approved sharps, tires, contaminated soils, vehicle batteries, used motor oil)

The process for designating materials for [curbside recycling](#) is described in section 4.5. Other separated materials are added or subtracted from the list of accepted materials when the volume, value, or environmental issues associated with disposal change. For example, porcelain toilets were accepted as recyclable materials until the economics of them changed, and the costs and impacts of recycling the toilets exceeded their market value.

### **Trucking Operations**

SPU owns and operates a fleet trucks and trailers to haul transferred materials away from the two city stations. Waste Management owns the containers used for the garbage rail haul. All garbage is loaded into sealed 40-foot intermodal containers and hauled to the Union Pacific Argo yard at 6th and Dawson. At that location, full containers are placed on a unit train and an empty container is returned to the transfer station via truck. Yard waste and other organics are transported to Cedar Grove in Everett or Maple Valley for processing. Other materials are also transported to recycling facilities in the local area.

### **Station Administration**

City staff also performs the other functions at the stations:

- Scale operators weigh vehicles as appropriate and collect payment from self-haul customers. To the extent possible, they also screen incoming loads for unacceptable materials and compliance with Washington State covered load law.

- Floor workers direct vehicles and keep the operational areas clean and safe. They also keep an eye out for unacceptable materials.
- Administrative employees ensure personnel and other resources are appropriately allocated. They also generally see that staff has what is needed to do their jobs well and safely.

Operations and maintenance costs for the two recycling and disposal stations were approximately \$7.3 million in 2009. In addition, SPU Operations spends about \$2 million per year on heavy equipment capital purchases.

### Trip Reduction

In 2008 and 2009, following the *Zero Waste Resolution*, SPU studied self-haul traffic coming to the north and south transfer stations to determine what steps could be taken to reduce vehicular traffic. Consultant recommendations fell into three action areas:

- Spread traffic into less busy periods
- Shift resident self-haul trips to curbside collection alternatives
- Shift C&D waste trips to other disposal or recycling stations

Based on these recommendations, SPU placed web cameras at two locations at each station showing the length of waiting lines. Beginning May 2010, by going online, customers could view congestion and possibly choose a less busy time for their trip. The web cam system is likely to reduce congestion around the stations but is unlikely to reduce total vehicle trips.

Other strategies to spread trips through station operating hours, such as time-of-day pricing and extended hours during summer when the stations are busiest, may be studied further for later implementation. In the short run, extending station hours is likely to prove cost-prohibitive. Reduced disposal volumes have reduced revenue. Increasing operating hours would increase costs.

In 2010, SPU began modestly promoting curbside collection services as an alternative to self-haul trips, using the *Curb Waste and Conserve* newsletter and the web pages connected to the web cam congestion-viewing service. We plan to increase promotion of curbside services when revenues permit. The alternatives to self-haul trips include using:

- Bulky-item collection service, available at the same price as self-haul drop-off
- Extra garbage set-outs
- 96-gallon yard waste service or extra yard waste set-outs when needed

All these services are priced comparably with self-haul. Some additional strategies remain under consideration for the future, including mandatory bulky-item curbside collection of appliances.

Perhaps more significant self-haul trip reduction can result from policy changes affecting C&D wastes. Among policy options is redirection of certain kinds of C&D loads to other stations, particularly those with high recyclable materials recovery rates. Banning the disposal of certain C&D materials should noticeably reduce vehicle traffic at the disposal

stations. See the MSW self-haul ban recommendations in section 4.3.4, and Chapter 5, Other Seattle Solid Waste Programs, for more detail on C&D waste.

### Facility Improvements

SPU has made the following progress:

- **South Transfer Station** — In early 2010, SPU signed a design-build contract through competitive bid. Discovery of soil contaminants on the new site delayed ground breaking. Site remediation was completed and ground breaking occurred in November 2010. The rebuilt station will open mid-2012.
- **North Transfer Station** — As of this writing, SPU is nearing completion of working with the stakeholder committee to choose a site utilization (design) concept for the site. The stakeholder committee consists of neighborhood representatives and major users of the current facility. After that, SPU plans to choose a design-build contractor.

## 4.4.4 Transfer Facilities Alternatives and Recommendations

Recommendations involving transfer facilities fall into the major categories of new recycling initiatives and decisions about the transfer system itself. See section 4.3 for all the [new recycling recommendations](#) affecting every part of the MSW system.

This plan revision continues to promote goals for transfer functions spelled out in the 1998 Plan and 2004 Plan Amendment:

- Increase recycling, as self-haul sector's contribution to the city's overall recycling goals
- Increase efficiency, convenience and accessibility of services

The alternatives considered in this Plan focus on programs to make new gains toward these goals with an eye to optimizing transition to the rebuilt facilities.

### Transfer Facility Recycling Recommendations

Transfer facility recycling recommendations mainly strive to divert more recyclable material from the self-haul waste stream by:

- Banning certain materials from disposal in the garbage
- Making reuse and recycling drop-off more convenient
- Educating self-haulers about recycling opportunities

### Transfer Facility System Recommendations

Transfer system recommendations optimize current station functions and anticipate the rebuilt facilities.

#### Keep Up Old Stations as Needed

According to the current rebuild schedule, the old SRDS will be in use until the new north facility is complete in 2014. SPU will continue to maintain all structures, systems,

and equipment as needed to keep old facilities safe and functional as long as they are in use.

There are no viable alternatives to the use of these stations; they must be kept up.

### **Interim Major Purchases should be Compatible with Rebuilt Stations**

This recommendation applies mainly to equipment purchases. Compatibility is as important as cost. For example, SPU could potentially save in the near term on purchases that work in the old facilities but do not suit the new facilities. If the useful life of equipment extends over the transition to the new stations, then the larger cost may be warranted. SPU will incorporate this analysis into all major purchasing decisions.

### **Incorporate Equitable Service Goals into Operations**

From signage, to information handouts, to customer interactions, station operations will look for opportunities to make service equitable for all Seattle's populations, particularly the historically underserved.

### **Implement Trip Reduction Strategies without Compromising Customer Service**

SPU will continue to offer live views of customer lines via the SPU website. We will increase promoting curbside services, like larger cans, bulky item pick-up, and extra set outs, when resources allow. Additional strategies will remain under future consideration, such as mandatory bulky item curbside service. Such strategies will include analysis for impacts on the essential community services that the stations provide.

### **Implement Alaskan Way Viaduct Project Contingency Plan**

When the viaduct's closure schedule is better known, SPU will evaluate options and implement the chosen strategy. The chosen option largely depends on the status of the city station rebuilds.

Each option will have associated capital or operations and maintenance cost. Each option also affects the city's collection contractors to one degree or another. The collection contracts contain provisions for such impacts.

### **Rebuild Transfer Stations**

As contemplated in the 1998 Plan and 2004 Plan amendment, SPU will rebuild the north and south transfer stations, at their present sites or on adjacent property. This will increase recycling and efficiency and reduce impacts on the neighboring communities, environment, our customers and employees.

The capacity provided by the rebuilt facilities, in conjunction with existing private transfer capacity, is projected to satisfy Seattle's solid waste transfer needs for at least as long as the 50-year expected life of the rebuilt facilities. SPU has no plans to develop any new solid waste handling facilities. Should a private company seek to construct a new solid waste handling facility in Seattle, approval from Public Health - Seattle & King County is required, in addition to land-use approvals from the City of Seattle. See section 4.5.2, Planning Issues, [Solid Waste Facility Siting](#) for discussion about siting guidelines.

### Continue Existing Station Recycling Functions

Current recycling services at the existing transfer stations will continue. Enhancements to recycling at the stations will be associated with the new facilities. It is not feasible to add recycling functions to the existing stations. Those stations are already handling more tons and more material streams than that for which they were originally designed.

### Continue Planning Transition to New Facilities

SPU will continue to refine staffing and equipment needs estimates for each stage of the transition to the new facilities.

### Plan for South Recycling and Disposal Station

SPU will renew planning for the SRDS old site when resources become available and decisions on NTS are made. Priority will be given to reuse and recycling. If future recycling gains lag significantly below expectations, a facility that sorts unsorted discards (a "dirty" recycling facility) may be considered.

## 4.4.5 Monitoring and Performance Measurement

Performance monitoring of the transfer stations is ongoing. The focus ranges from day-to-day operations to contribution to the 60% overall recycling goal. The City of Seattle has tracked the following measures for years and will continue to do so:

- **Station Availability.** This is a measure of reliability. It monitors scheduled station open times against times when a station must be closed to incoming traffic. Station closures are typically event-driven, some more controllable than others, such as compactor failure or dangerous material found in the tipping area.
- **Customer Turnaround Time.** This measure monitors the numbers of minutes elapsed from the time vehicles cross the inbound scales to the time they cross the outbound scales. Collection trucks and other vehicles have their own targets.
- **Removing All Waste from Facilities Each Day.** Waste sitting in tipping areas overnight can release odors into surrounding neighborhoods, especially in summer. SPU strives to empty the tipping areas at the end of each day, at least 90% of the time.
- **Satisfactory Inspections by Public Health.** As the regulatory agency for solid waste handling facilities, Public Health - Seattle and King County regularly inspects City of Seattle stations. Because compliance is important, SPU includes tracking the inspections in departmental performance monitoring.
- **Customer Satisfaction.** Customer satisfaction is tracked regularly at the stations through simple feedback cards given out to customers at the stations. Questions about the stations are also included in SPU's regular community-wide phone surveys.
- **Transfer Cost Efficiency.** This measure calculates the most recent cost per transferred ton compared to similar periods in the past. If a significant variance emerges, it signals station management to investigate the reasons for the variance.
- **Self-Haul Recycling Goal.** Within the overall 60% recycling goal, each sector has its own goal. Since City of Seattle transfer stations are the sole service providers for the



self-haul sector, the stations monitor annual recycling performance for this sector. See section 4.3 for a discussion of the influences on the [self-haul recycling rate](#).

## 4.5 PROCESSING AND DISPOSAL

This section covers the end points of Seattle's MSW system: processing and disposal. *Processing* refers to the sorting of recyclables at the recycling facility and the composting of yard and food waste. See section 4.2, Collection, for [how the materials arrive at facilities](#). Once processed, materials go to private enterprises for further processing or to markets. *Disposal* means landfilling, including the rail haul to the landfill.

### 4.5.1 Recommendations from 1998 Plan and 2004 Amendment

Table 4-19 summarizes processing and disposal recommendations from previous plans.

**Table 4-19**  
**Past Recommendations for Processing and Disposal Seattle MSW**

| Recommendation                                                                                                                             | Status                                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1998 Plan</b>                                                                                                                           |                                                                                                                                                      |
| Support development of new organic materials processing capacity for yard and food waste                                                   | Local processor well established. Multiple sites and now taking food                                                                                 |
| Establish environmental standards or performance criteria for organic materials processing facilities in evaluating new contract proposals | Contract requires processor to comply with environmental and health laws                                                                             |
| Long-haul landfill disposal of garbage will continue                                                                                       | Done                                                                                                                                                 |
| Create economic development incentives for local recyclables manufacturing, and processing facilities                                      | No action                                                                                                                                            |
| Encourage the development of food waste processing facilities in the region                                                                | Currently one major food composting service provider with two sites                                                                                  |
| <b>2004 Amendment</b>                                                                                                                      |                                                                                                                                                      |
| Explore promising new technologies for processing                                                                                          | Continuing to monitor new industry developments. Improvements at contractor's plant allowed more materials and single-stream recycling starting 2009 |
| Evaluate costs and benefits of co-mingled recycling collection                                                                             | Successfully negotiated contract with recycling processor for co-mingled materials. All materials, including glass, co-mingled starting 2009         |
| Evaluate costs and benefits of terminating, amending, or continuing the long-haul disposal contract prior to 2009 opt-out date             | Contract successfully amended with reduced payments and opt-out dates extended to 2019 and 2021                                                      |

### 4.5.2 Planning Issues

Planning for processing and disposal requires looking at issues affecting recycling, composting, and landfilling.

#### Flow Control

All Seattle's MSW that is not recycled or composted is, by law, under city control. The City of Seattle has arranged for and committed to transporting this waste via train to the Columbia

Ridge Landfill as specified in Seattle's long-haul and disposal contract. See Chapter 5, Other Seattle Solid Waste Programs, section 5.1 for detail on C&D flow control.

## Processing and Disposal are Contracted Services

The City of Seattle contracts with private service providers for recycling processing, organics composting, and landfill long-haul and disposal. Any programmatic changes would be made through those contracts. Public Health - Seattle and King County regulates recycling and composting processing facilities and issues the required solid waste permits.

Since the 1960s, the City of Seattle has acknowledged that it is unfeasible to site a new landfill within the city limits. A 1988 alternatives study noted that 270 acres of undeveloped land would be needed for a reasonably efficient landfill. Our 1989 plan, *On The Road To Recovery: Seattle's Integrated Solid Waste Management Plan*, summarized the results of the 1988 study. The report found several factors limited the city's landfill options. Continuing to use King County's landfill was very expensive. It was unfeasible to locate a new landfill in Seattle or the local area. And there was very negative public reaction to incineration. Given those limitations, landfilling in an arid region was considered the best way to meet environmental standards and provide long-term MSW disposal capacity.

## Solid Waste Facility Siting

Because this Plan contains no proposal to locate solid waste disposal facilities in Seattle, we do not present an analysis of potential sites that would be required by law.

### Disposal Facilities

Washington State law prescribes that local plans that include the siting of disposal facilities must evaluate potential alternative sites. RCW 70.95.090 (9) requires that solid waste management plans include:

*"A review of potential areas that meet the criteria as outlined in RCW 70.95.165"*

In turn, RCW 70.95.165 (1) states:

*"Each county or city siting a solid waste disposal facility shall\* review each potential site for conformance with the standards as set by the department for:*

- (a) Geology;*
- (b) Groundwater*
- (c) Soil;*
- (d) Flooding;*
- (e) Surface water;*
- (f) Slope;*
- (g) Cover material;*
- (h) Capacity;*
- (i) Climatic factors;*
- (j) Land use;*

- (k) *Toxic air emissions; and*
- (l) *Other factors as determined by the department.*

\*[Emphasis added.]

Read together, a solid waste management plan is to evaluate potential areas for the location of a solid waste disposal facility only if a disposal facility is proposed to be sited in the city. No disposal facilities are proposed to be located within the City of Seattle for the term of this Plan, and it is highly unlikely that a disposal facility would ever be located within the City of Seattle because Seattle is a fully developed, densely populated urban center. Furthermore, a city-built disposal facility would violate terms of the City of Seattle's contract for distant landfill disposal (which runs through 2028). Also, Seattle flow control ordinances prohibit any public or private party from taking any waste generated from within the Seattle city limits to any other disposal facility.

In short, because no solid waste disposal facilities are proposed to be located in Seattle, and would not be allowed in Seattle were they to be proposed, this Plan does not contain an analysis of potential disposal sites as described in RCW 70.95.165 (1).

### **Handling and Transfer Facilities**

As stated above, the Solid Waste Management Act, RCW 70.95, only requires a potential analysis of alternative sites for the location of solid waste disposal facilities. Contrary to statements contained in Ecology guidelines, the Act does not require an analysis of alternative locations for the siting of other types of solid waste facilities, such as solid waste transfer stations. However, in response to citizen comments regarding this Plan, the city offers the following comments regarding the application of the disposal facility standards to the siting of transfer stations.

Of the standards (a) through (k) listed in RCW 70.95.165 above, almost none are relevant siting criteria for transfer stations. "Cover material" obviously is a landfill issue and has no relevance for transfer stations. "Climatic factors" has no relevance for transfer station siting; presumably it has to do with the effect of precipitation/evapotranspiration on leachate generation in landfills. "Toxic air emissions" appear to be relevant to garbage incinerators and perhaps landfills, but not transfer stations. "Geology, groundwater, soil, flooding, surface water, slope, and capacity" are all potentially relevant for the design and cost of a transfer station. However, none of them are factors to preclude the siting of a transfer station.

The one criteria that is relevant for transfer station siting is (j) Land Use. If the city were required to apply this criterion to siting of a new transfer station at some point in the future, the city would limit the location of the facility to sites where such a facility would be permitted by the city's land use regulations.

## **Future Capacity**

### **Recycling Processing**

Recycling capacity in the Seattle area is not considered an issue for the planning period. Seattle's current contract is guaranteed through 2019. Furthermore, the Washington State Department of Ecology currently lists more than 280 recycling facilities in King, Pierce and Snohomish counties. At least three of these are large facilities that process

mixed recycling and are within 20 miles of Seattle. SPU expects the many other private recyclers that handle limited ranges of materials to continue their presence in the local market.

### **Composting**

Current capacity is adequate. However, statewide there is concern about future capacity as more cities and counties divert more organics. Some believe that the present regional organics processing system cannot handle peak summer organics without creating odor problems. Seattle's provider is the only large-scale firm in the local area taking mixed yard and food waste, with two locations within 25 miles of the city. Our current contract is guaranteed through 2013 with renewal options through 2015.

### **Landfilling**

Columbia Ridge landfill, Seattle's current landfill, projects that it will be able to receive material beyond the current contract's guaranteed 2028 end date. Rail-haul capacity has not been an issue. The contract provides for alternate transportation if rail lines become unavailable for a time. Other private landfills east of the Cascades project ample capacity for decades, according to the Washington State Department of Ecology, [Solid Waste in Washington State, 18th Annual Status Report](#)

## **Shifts in Materials over Time**

### **Recycling**

As discussed in the section on [collection](#), consumer patterns change over time. Likewise, new materials and combinations of materials continue to enter the consumption cycle. SPU must conduct waste composition analyses frequently enough to be able to respond to these changes. (For example, we will continue to work with processors to designate additional recyclable materials, and modify collection programs as needed.)

### **Composting**

As with recycling, what is in the composting stream can change over time. An example of this is Seattle's 2009 ordinance requiring quick-serve restaurants to use compostable, recyclable, and reusable packaging. Our composting contractor worked with private industry to develop truly compostable packaging. Now more of these materials are entering the compost stream. As more and more packaging claims to be compostable, SPU needs to work with the processor to monitor these materials and design upstream program changes as needed.

### **Landfilling**

As diversion becomes more effective, the composition of material entering the landfill will shift. This is not expected to affect Seattle's contract. However, it's important to stay informed about changes. For instance, less landfilled organic material could reduce the amount of landfill gas sent to the landfill gas-to-electricity (LFG) energy system being developed at the Columbia Ridge Landfill.

## Processing Efficiency and Source Separation and Collection

### Recycling

Contamination has increased as we continue to add more materials and move to full single-stream (co-mingling all recyclables) collection. However, Seattle's contracted facility, which went through a major rebuild in 2008, appears to be separating materials well. Glass, shredded paper, and plastic bags are primary challenges.

### Composting

The potential is increasing for more contamination in yard and food waste streams as Seattleites increasingly become aware of the opportunity to compost food packaging. Many of these products look much like non-compostable versions. It is important for SPU to work with its organics processing contractor to monitor contamination rates, work toward compostable product labeling, and educate customers on how to avoid processing issues.

## Emerging Technologies

### Recycling

Recycling facility technology improvements have made it possible to implement single-stream recycling collection. This is a key advance toward increasing recycling rates. Future advances could make more materials recyclable or improve the quality of materials sent to market.

### Composting

As regional demand for composting increases, SPU's contractor and others are researching and developing new technologies. For example, SPU's current contractor is planning to install an anaerobic digester at a facility serving Seattle. Anaerobic digestion is mainly done to recover energy. However, its development can also introduce more capacity and more competition for processing the wetter part of the organics waste stream that is mostly food waste. It is important that facilities we use employ technologies compatible with Seattle's solid waste management goals.

### Disposal

Private entrepreneurs are developing an array of alternatives to landfilling. Most of these are various forms of combustion, pyrolysis or gasification. Most of these technologies involve large capital investment. To pay off the investment, such facilities require a minimum daily level of material over an extended time. These restraints act as a disincentive to recycling. On the other hand, landfilling requires no daily minimum and less material disposal extends the life of the landfill. Seattle has ready alternatives to combustion and other capital-intensive disposal technologies by increasing waste reduction, recycling, and composting as well as good long-term access to landfilling.

### 4.5.3 Current Processing and Disposal Programs and Practices

SPU contracts with two processors for the material we count as recycling:

- **Rabanco Recycling Center** — mainly traditional recycling (newspaper, glass bottles, tin cans, etc.)
- **Cedar Grove** — mainly organics (yard trimmings and food waste)

These two facilities process all of the recycling and organics collected by the city's contractor and that come through Seattle transfer stations.

The Rabanco recycling facility processes about 27% (2009) of all Seattle's recyclables. Primarily, these are traditional recyclables collected by Seattle's contracted haulers and some privately collected material from the commercial sector.

The Cedar Grove composting facility processes about 33% (2009) of all Seattle's recyclables. These include all organics collected by Seattle's contracted haulers and some privately collected material from the commercial sector. All separated food waste goes to Cedar Grove.

Other private processors receive material directly from commercial businesses. These include traditional recyclables and other recyclables such as appliances, consumer electronics, tires, metals, etc. Still other private providers receive clean yard waste (no food).

Table 4-20 shows the tons of material that was recycled and composted, by sector, for the 10-year period ending 2010.

**Table 4-20**  
**Material Recycled in Seattle 2000 - 2010**

| Year | Single-Family | Multi-Family | Self-Haul | Commercial | Total Tons |
|------|---------------|--------------|-----------|------------|------------|
| 2000 | 120,969       | 12,611       | 21,141    | 162,989    | 317,710    |
| 2001 | 120,910       | 15,124       | 22,148    | 149,522    | 307,539    |
| 2002 | 118,640       | 15,068       | 22,729    | 149,029    | 305,260    |
| 2003 | 118,322       | 16,043       | 22,365    | 126,597    | 283,083    |
| 2004 | 123,103       | 16,142       | 23,069    | 159,627    | 321,655    |
| 2005 | 128,197       | 18,245       | 23,865    | 179,456    | 349,763    |
| 2006 | 138,868       | 19,903       | 24,015    | 215,333    | 398,118    |
| 2007 | 142,634       | 21,261       | 25,447    | 220,011    | 409,352    |
| 2008 | 139,928       | 21,024       | 20,415    | 213,493    | 394,860    |
| 2009 | 147,786       | 19,028       | 16,328    | 184,593    | 367,735    |
| 2010 | 152,175       | 20,887       | 12,625    | 203,511    | 388,898    |

For disposal, the City of Seattle contracts with a single provider, Waste Management, for the rail haul to and disposal at their landfill in Arlington, Oregon. The following sections give more detail about Seattle's recycling and disposal contracts.

## Recycling Processing

Seattle currently contracts with [Rabanco, Ltd.](#) (a company under Allied Waste Services, a Republic Services company) for recycling processing at their Rabanco Recycling Center and Transfer Station. The Rabanco facility is located in Seattle's industrial area south of downtown at 3rd Avenue South and South Lander. The current contract began April 1, 2009 and it is guaranteed through 2013. By city choice, the [contract](#) can be extended to March 2016. By mutual choice, it can be extended to 2019. SPU will review options for the future well ahead of those deadlines, with enough time built in to pursue the chosen contracting approach.



The contractor is responsible for processing and marketing all recyclables collected under city contracts with these provisions:

- Hours open to city collections trucks
- Collection truck in-and-out (cycle) time
- Capacity to receive, process and store a week's worth of materials in 1 week
- Residuals limits
- Transporting material to markets
- Reporting requirements
- Recycling market risk sharing
- Backup recycling facility in the event of a temporary shut down
- Employees (permanent jobs, living wage, benefits)

More than 40 people work at the 80,000-square foot facility to sort and bale recyclables so they can be made into new products. Quality control inspectors measure contamination and commodity types in incoming loads of recycling. A [virtual tour](#) of the facility may be viewed on SPU's website.

Most commercial recycling is provided by private arrangements. Vendors collect both mixed and source-separated materials, and take them to a variety of processors. Which processor they use depends on the material and any agreements haulers and processors may have. Depending on the quantity and type of materials recycled, commercial customers who recycle may receive revenue, receive free collection, or pay a fee. Recycling is usually lower cost than disposal.

## Designation of Recyclable Materials

The process by which materials are designated as recyclable for Seattle's collection programs is through contract negotiation with the processor. Seattle considers processing costs, commodity markets, customer interests, alternative recycling options, and other factors in negotiating and designating recyclable materials. The processing contract prohibits disposal of designated materials.

Information on [currently recyclable materials](#) is best viewed on SPU's website. The last time materials were added was with the implementation of new collection contracts in 2009. As noted, opt-out dates for the current processing contract are 2013, 2016 and 2019. These are the next points at which SPU could seek a change to the list of designated materials without a change to the present contract. SPU will notify the State of Washington Department of Ecology when any changes are made to the designated materials.

The recycling collected by Seattle's contracted collectors becomes their property upon collection. It becomes the processor's property when it is dropped off.

SPU pays its contracted recycling processor monthly at a set price per ton to process the materials. The actual amount we pay each month depends on tonnage volume and commodities prices for the processed materials. SPU bears 100% of the risk (and benefit) of market price changes for recyclables. The contract sets a base price for the various commodities. If market prices are higher, then we receive a "credit" (savings) on our processing bill. If market prices are lower, the processing bill goes up (an extra cost). Even during the recent recession when commodities prices dipped significantly, all the recyclable materials went to market (none were landfilled). Markets have since recovered.

Over the past 10 years, the city has added materials to its recycling program (none were dropped). Seattle has the good fortune of being a major West Coast port with excellent access to domestic and foreign markets. The processing contract does not allow the processor to dispose recyclable materials without SPU's specific permission.

Privately (commercial sector) collected recyclables are privately processed and traded. These materials include those in our recycling collection program as well as others. The city's required annual recycler reporting that began in 2007 garners information on the companies involved and the materials they handle. It is a complex system where one material could be handled by several different companies in turn. It takes SPU months to sort out the resultant "double counting" for the annual recycling report. An example of the reporting form the companies must use can be seen in Appendix E, Recycling Businesses Reporting.

See Chapter 3, Waste Prevention, for a discussion on Seattle's market development activities.

## **Yard and Food Waste Composting**

The city [contracts for processing food scraps and yard debris](#) with Cedar Grove Composting, Inc. under a service contract that began in April 2001. The most recent contract amendment will end in March 2013, with city options to extend service to March 2014 and March 2015. Current organics processing includes yard waste, all food waste, compostable (food soiled) paper and other approved food packaging. Seattle's material primarily goes to the Cedar Grove Maple Valley facility. Material from north Seattle goes to the company's facility near Everett.



The contract with Cedar Grove requires them to process the material into a marketable product, such as soil amendment. They may not deposit material at a landfill or incinerator. Marketing of the product is at the contractor's risk, expense and profit (or loss). Among the contract's further provisions are the following:



- Compliance with all applicable ordinances, zoning, and regulations (health and air)
- Primary facility (Maple Valley)
- Hours open to city trucks and city collection contract trucks
- Handling and disposal of contaminated waste
- Pilot tests of new processing methods or services
- Food waste customer education, for commercial businesses and all information materials
- Reporting
- Back-up facilities in the event of a temporary shutdown

Once delivered to the facility, grinders shred the material, and then conveyors move it to aeration areas specifically designed and constructed for controlling the aeration process. Blowers and special covers also control the process whereby naturally occurring microbes degrade the material. The covers also control odors. At further stages in the process, the material is moved to other piles. The end-stage piles are not covered. In the final stage, the material is screened and blended into a mix for bags or bulk use. For more details about the composting process visit [Cedar Grove's website](#).

Seattle's contract with Cedar Grove was amended to incorporate food waste and compostable paper processing in 2004. Seattle began collecting vegetative food waste and compostable paper with the distribution of household yard waste carts in 2005. The service was expanded to all food waste in 2009 with the change to weekly pickup associated with Seattle's collection contracts changes. Cedar Grove also conducts compostable food service products testing.

Cedar Grove is continually looking at ways to improve its operations. In 2010, they announced they will collaborate with a company to build an anaerobic digester at their Everett facility and integrate it with their processes. The project will generate biogas for automotive fuel or for producing electricity. They are also working with their surrounding communities on improving strategies for controlling occasional odor issues during the warm months.

Cedar Grove has been able to receive and process all the material they are obligated to under their contract with Seattle. Longer term, the Washington State Department of Ecology's *Beyond Waste* plan (2009) recognizes that the regional and local capacity for processing organics needs to grow with increased recovery. Ecology plans to identify and pursue effective incentives toward this end. SPU will stay apprised of these activities, and continue to promote backyard composting and grasscycling. SPU will also continue to encourage or require city department purchases of local compost product for public projects. See Chapter 3, Waste Prevention, for detail on how to minimize Seattle's need for centralized composting.

## Rail Haul and Landfill Disposal

The City of Seattle [contracts with Waste Management of Washington](#) (Waste Management) for rail haul and disposal of all nonrecyclable waste at Columbia Ridge Landfill in Gilliam County, Oregon. This contract has been in place since 1990. It was



most recently amended (Amendment 3) in 2008. It expires in 2028, with city opt-out dates before then.

After it has been compacted into shipping containers at transfer facilities, garbage is hauled to the Argo rail yard (receiving facility) and loaded onto the train. The Argo Yard is owned and operated by the Union Pacific Railroad, and is located in the industrial area south of downtown Seattle at 4th Ave. S. and S. Dawson. Trains leave Seattle six times a week, stacked two-high. Waste Management of Washington owns the containers.

The Columbia Ridge Landfill and Recycling Center is owned and operated by Oregon Waste Systems, a division of Waste Management. Gilliam County is in an arid region east of the Cascade Mountains. The landfill site has operated since 1990 and is permitted and regulated by the Oregon Department of Environmental Quality.

Trains hauling city waste unload the containers at an intermodal siding on the landfill site. Tractors haul the containers to the active area to be tipped. The active part of the landfill (Module 20) has capacity for 2 million tons.



The contract contains further provisions for:

- Partnership incentive (partner waste)
- Rail yard hours open to receive full containers
- Container storage capacity (2 days)
- Truck turn-around time
- Container data and reporting (number of containers available, storage availability, location, and transfer station of origin)
- Truck scales, intermodal lift trucks
- Backup receiving facility (intermodal rail yard): Terminal 18, Port of Seattle on Harbor Island, Seattle
- Unacceptable containers (leaky, prohibited waste)
- Locomotives and double-stack rail cars
- Alternate rail lines
- Landfill design and operation meet Washington and Oregon standards
- A screening program at the landfill for unacceptable wastes
- Incremental landfill closure and post-closure care
- Special Waste Management Plan (special handling for asbestos, construction and demolition debris, and contaminated soils)

As of the 2008, contract amendment with Waste Management, WM Renewable Energy, LLC was developing and permitting the landfill gas-to-electricity system at the Columbia Ridge Landfill. The city has the right to purchase all of the energy produced by the LFG system.

## 4.5.4 Alternatives and Recommendations for Processing and Disposal

### Recycling Processing

Any significant alternatives that involve recycling processing relate to the processing contract. These could be interim contract amendments or longer term changes in Seattle's contracting strategy. In the recent past, those changes have focused on changes in accepted materials and sharing market risk. Seattle does not plan to develop a city-owned recycling processing facility.

Strategies to reduce contamination fall under [collection programs](#) (see section 4.2).

Strategies to minimize processing volumes fall under waste prevention (see Chapter 3, Waste Prevention).

Strategies for market development fall under waste prevention (see Chapter 3, Waste Prevention).

#### Recommendations:

- Continue with contracting out city-collected recycling. Seattle's strategy to contract out recycling processing for the material gathered by our collection contracts has proved successful. Seattle plans to continue with this strategy. The City of Seattle is contractually bound to do so through 2013.
- Continue allowing open market processing services for material privately collected from commercial sector
- Evaluate optimal contracting approach in anticipation of 2013/2016/2019 contract end
- If future recycling gains lag significantly below expectations, consider testing a "dirty" recycling facility (also called "dirty" Materials Recovery Facility).

### Yard and Food Waste Composting

As with recycling processing, any significant alternatives for yard and food waste composting would develop from the contracting process for this service. Seattle does not plan to develop a municipally-owned composting facility.

Promoting backyard composting, however, is still an important strategy for minimizing the need for centralized composting. The convenience of curbside composting service has resulted in some migration of organics from the backyard to the curb. Recession budget cuts forced the City of Seattle to scale back backyard composting promotion. Reinvesting in education could lessen the migration to curbside. See Chapter 3, Waste Prevention, for more detail on backyard composting.

As to capacity, even though SPU has a guaranteed contract for composting services, we support building regional capacity and competition, consistent with the state's *Beyond Waste* goals.

It is also in Seattle's interest to support and promote changes to food packaging and food packaging labeling to minimize non-compostables. These changes would allow compostables and non-compostables to be more easily distinguished from each other. When consumers and

processors are better able to make these distinctions, more material is compostable and contaminants minimized in processing.

Strategies to reduce contamination fall under collection programs (see section 4.2).

Strategies for market development and public agency product procurement fall under waste prevention (see Chapter 3, Waste Prevention).

**Recommendations:**

- Continue with contracting out city-collected organics processing
- Continue allowing open market processing services for commercial sector
- Support composting capacity development. Pursue a competitive Request for Proposal process for organics processing services to serve Seattle after the current service contract ends in 2013/2014/2015. Continue to encourage backyard organics composting (see Chapter 3, Waste Prevention)
- Support changes to food packaging and labeling in ways that promote composting and reduce contamination
- Enhance contamination outreach and enforcement

## **Disposal**

Disposal alternatives for the planning period are restricted due to Seattle's long-term contract for landfill disposal, which runs to 2028.

In the meantime, alternative disposal technologies continue to evolve. Seattle should stay abreast of those developments. Seriously competitive technologies will require alignment with the city's environmental goals and a thorough life-cycle analysis.

**Recommendations:**

- Continue contracting for landfill disposal
- Do not pursue or authorize direct combustion of mixed MSW. Do not authorize such facilities
- Monitor and consider emerging conversion technologies
- Evaluate contracting approach and disposal alternatives as 2028 nears

## **4.5.5 Monitoring and Performance Measurement**

All three disposal contracts have clear performance standards and penalties for non-performance. The strategies SPU employs to monitor performance include:

- Public Health - Seattle and King County regulates private processors and alerts SPU to apparent violations as appropriate via regular inspections.
- SPU processing and disposal contract staff regularly monitors contractor reports.

- SPU staff maintains open communication with contractors for identifying problems early and working out solutions.
- Commercial sector recycling rates indicate how well private market is serving this sector.

## 4.6 SURVEILLANCE & CONTROL (ENFORCEMENT)

In the City of Seattle, facility permitting and compliance (including SPU facilities) are the responsibility of Public Health - Seattle and King County. Illegal waste accumulation issues are addressed in SPU's illegal dumping program. See Chapter 5, Other Seattle Solid Waste Programs, section 5.3 for information on Clean City Programs.

A team of about a dozen SPU solid waste field inspectors supports the implementation and delivery of city-contracted collection services. Field inspectors mainly focus on the residential sector. Their duties include monitoring for compliance with the city's prohibitions against putting recyclable materials in the garbage.

## 4.7 EMERGENCY MANAGEMENT

Seattle's position as a Pacific Rim center of manufacturing, technology, trade, and tourism make it vulnerable to both natural and human-caused hazards. The city's geography and built environment put it at risk for catastrophic events such as earthquakes, pandemics, and terrorism. Because of these hazards, Seattle must maintain a well-developed integrated emergency management system in which all hazards are considered in a central planning structure. Two specific emergency response plans are relevant to the city's solid waste system:

- Continuity of Operations Plan (SPU)
- Disaster Debris Management Plan (City of Seattle)

### 4.7.1 SPU Continuity of Operations Plan

The Continuity of Operations Plan (COOP) describes how critical functions, including solid waste, will be maintained in a significant emergency, and establishes timeframes for restoring solid waste services. The COOP outlines steps to maintain SPU's critical services, restore them to pre-established Recovery Time Objectives (RTO), and sustain them for up to 30 days.

The COOP also provides for continuity of management and decision-making if senior and technical personnel are unavailable. The COOP complements the SPU Disaster Readiness and Response Plan (DRRP). The DRRP contains information on how SPU will respond to potential events, crises, or disasters that could involve SPU staff, facilities, or operations. The DRRP addresses response to emergencies and restoring infrastructure and systems, while the COOP ensures continuation of essential SPU functions under a broad range of circumstances.

SPU is currently drafting the COOP, which will be final in 2015.

## 4.7.2 City of Seattle Disaster Debris Management Plan

The City of Seattle's Disaster Debris Management Plan sets guidelines for debris removal and processing after a debris-generating disaster. The plan was adopted by Council Ordinance 122884 in 2008. SPU recognizes the importance of maintaining public health and safety by planning for efficient removal of debris caused by disasters. The plan describes the city's responsibilities, procedures, and resources available after an emergency or disaster that over-taxes the normal municipal solid waste system. The plan is designed to eliminate threats to life, public health and safety, and ensure social and economic recovery of the affected community.

The Debris Management Plan ensures that SPU and the city can:

- Address debris generated from residential or public properties in a timely manner following a debris-generating event
- Institute a plan to address debris generated on commercial and private property following a significant debris-generating event
- Ensure that vegetative and other recyclable debris and other prohibited materials are diverted from landfilling following a debris-generating event
- Maintain clear and concise documentation of activities eligible for Federal Emergency Management Agency (FEMA) reimbursement under the Public Assistance Grant Program during response and recovery phases

The city will update the plan in 2011 to 2012 to meet FEMA requirements and reflect SPU staffing changes.

The following provides more detail about the disaster plan, including municipal solid waste (MSW) collection, impacts on facilities, and recycling,

### Scope of Disaster Debris Management Plan

In activating the Debris Management Plan, SPU will follow two key sections: 1) Concept of Operations and 2) Recovery. The Concept of Operations section lays out the planning and assumptions that would guide debris removal for specific disasters. After Seattle meets life safety needs, removal efforts then occur in the recovery phase of an emergency. Two contracting efforts are underway to support the Disaster Debris Management plan:

- On-call contract for debris hauling and disposal
- On-call contract for debris hauler monitoring and collection of FEMA records

### MSW Collection and Emergencies

While increases to MSW may occur after a disaster, SPU will handle that waste through its existing contractors and steps outlined in the COOP. Therefore, it is not necessary for the Debris Management Plan to directly plan for MSW collection.

Current contracts for MSW collection, transfer, and disposal require minimum levels of services despite unplanned events. For example, when Union Pacific shut down its rail lines, Waste Management trucked solid waste containers to Seattle. Although solid waste services may stop during the initial response phase of a major disaster, the city could provide these services,

potentially at a reduced level, during extended response and recovery phases. Seattle will use all available MSW handling resources to provide the maximum achievable level of MSW service during the recovery phase of a major disaster.

During lower impact events, such as a severe wind storm, the city may use normal MSW resources to handle additional materials (vegetative debris) during the recovery period.

### **Local Solid Waste Facilities Capacity Impacts**

Waste management activities also occur in the city other than through Seattle's collection contracts. These activities include private organics and recycling collection in the commercial sector and C&D collection and transfer. Such activities are outside the scope of the disaster debris plan. These materials are, however, transferred or recycled at local transfer and composting facilities. The throughput at these facilities is limited. If a disaster generates additional material through these private systems, the city's ability to use the facilities may be impaired. Therefore, Seattle will rely on temporary debris storage and reduction sites to stage, reduce and haul away debris.

### **Debris Diversion and Recycling**

A secondary goal of the Debris Management Plan is to maximize material recycling or diversion to beneficial use. The disaster plan evaluates options for recycling and beneficial use. Some recycling facility options are Cedar Grove Composting, Renton Concrete, and Seattle Iron and Metal.

Other Seattle Solid Waste  
Programs



5





**Julia Haack**

*Tracks 2*, 2009

Latex paint on salvaged wood

54 x 44 x 3 inches

# Contents

## Chapter 5 Other Seattle Solid Waste Programs..... 3

|            |                                                         |           |
|------------|---------------------------------------------------------|-----------|
| <b>5.1</b> | <b>Construction and Demolition Debris.....</b>          | <b>3</b>  |
| 5.1.1      | Recommendations from 1998 Plan and 2004 Amendment.....  | 4         |
| 5.1.2      | Planning Issues.....                                    | 4         |
| 5.1.3      | Current Programs and Practices .....                    | 16        |
| 5.1.4      | Alternatives and Recommendations .....                  | 19        |
| 5.1.5      | Monitoring and Performance Measurement.....             | 23        |
| <b>5.2</b> | <b>Historic Landfills.....</b>                          | <b>24</b> |
| 5.2.1      | Recommendations from 1998 Plan and 2004 Amendment.....  | 25        |
| 5.2.2      | Planning Issues.....                                    | 26        |
| 5.2.3      | Current Programs.....                                   | 26        |
| 5.2.4      | Alternatives and Recommendations .....                  | 26        |
| 5.2.5      | Monitoring and Performance Measurement.....             | 27        |
| <b>5.3</b> | <b>Clean City Programs .....</b>                        | <b>27</b> |
| 5.3.1      | Recommendations from 1998 Plan and 2004 Amendment.....  | 27        |
| 5.3.2      | Planning Issues.....                                    | 27        |
| 5.3.3      | Current Programs and Practices .....                    | 28        |
| 5.3.4      | Alternatives and Recommendations .....                  | 33        |
| 5.3.5      | Monitoring and Performance Measurement.....             | 34        |
| <b>5.4</b> | <b>Moderate Risk Waste .....</b>                        | <b>34</b> |
| 5.4.1      | Recommendations from 1998 Plan and 2004 Amendments..... | 35        |
| 5.4.2      | Planning Issues.....                                    | 35        |
| 5.4.3      | Current Programs and Practice.....                      | 35        |
| 5.4.4      | Alternatives and Recommendations .....                  | 36        |
| 5.4.5      | Monitoring and Performance Measurement.....             | 37        |
| <b>5.5</b> | <b>Special Wastes .....</b>                             | <b>37</b> |
| 5.5.1      | Recommendations from 1998 Plan and 2004 Amendment.....  | 37        |
| 5.5.2      | Planning Issues.....                                    | 37        |
| 5.5.3      | Current Programs and Practices .....                    | 37        |
| 5.5.4      | Alternatives and Recommendations .....                  | 39        |
| 5.5.5      | Monitoring and Performance Measurement.....             | 39        |

### List of Figures

|            |                                                                    |    |
|------------|--------------------------------------------------------------------|----|
| Figure 5-1 | Flow of Seattle-Generated C&D Materials.....                       | 6  |
| Figure 5-2 | Overlap of MSW and C&D Generation in Seattle in 2007 and 2010..... | 9  |
| Figure 5-3 | C&D Generation in Seattle in 2010 All Sources.....                 | 10 |
| Figure 5-4 | C&D Recycling and Disposal Tons 2007 – 2010.....                   | 11 |
| Figure 5-5 | C&D Recycling Rates without Concrete in 2007 – 2010.....           | 12 |

## Chapter 5

### Other Seattle Solid Waste Programs

|                                                                                                |    |
|------------------------------------------------------------------------------------------------|----|
| Figure 5-6 C&D Disposed Tons via Private Stations and Intermodals in Seattle 2000 – 2010* .... | 12 |
| Figure 5-7 Number of DPD Permits issued by C&D Sector.....                                     | 13 |
| Figure 5-8 Composition of C&D Disposed at Private Stations.....                                | 14 |

### List of Tables

|                                                                                       |    |
|---------------------------------------------------------------------------------------|----|
| Table 5-1 C&D Generation in Seattle 2007 – 2010.....                                  | 11 |
| Table 5-2 C&D Recovery Rates by Material in 2010.....                                 | 15 |
| Table 5-3 C&D Recycling New Program Evaluations for Seattle .....                     | 20 |
| Table 5-4 Levels of Facility Certification in Seattle C&D Program Options .....       | 20 |
| Table 5-5 Seattle C&D Material Ban Schedule .....                                     | 23 |
| Table 5-6 Six-year Budget to Maintain and Monitor Historic Landfills in Seattle ..... | 24 |
| Table 5-7 Special Waste Programs in Seattle .....                                     | 38 |

## Chapter 5 OTHER SEATTLE SOLID WASTE PROGRAMS

This chapter describes all the other solid waste-related programs run by the City of Seattle. The materials involved in these programs are not defined as municipal solid waste (MSW). Construction and demolition debris comprises the major portion of these materials. This chapter also discusses historic landfill management, programs that address street-side litter and illegal dumping, special wastes, and management of moderate risk waste. SPU's solid waste management team is also responsible for abating graffiti on public property, which is funded separately from solid waste functions.

### 5.1 CONSTRUCTION AND DEMOLITION DEBRIS

Construction and demolition debris (C&D) is a large portion of all Seattle's waste materials. Construction and demolition projects generate C&D materials. The materials include concrete, asphalt paving, aggregates, wood waste, structural metals, asphalt composition roofing, gypsum wallboard, insulation and other construction materials.

The materials SPU counts as C&D are not handled through the MSW system. However, some C&D-type materials do enter the MSW system. C&D waste generation is considerably more variable compared with MSW and is highly sensitive to economic upswings and downturns.

In the past, C&D handlers delivered materials to separate C&D landfills for disposal. Now most Seattle C&D is disposed in the large regional landfills in eastern Washington and Oregon (which also accept MSW).



## 5.1.1 Recommendations from 1998 Plan and 2004 Amendment

The 2004 Plan Amendment included neither specific goals nor objectives for C&D. The major reason was difficulty in tracking and measuring the amount of C&D handled outside Seattle's MSW system. However, the 2004 Amendment did propose pursuing measurement strategies and developing a recycling goal for C&D.

Since then, SPU carried out studies on waste generation, collection practices, recycling levels, processing facility capacity, and end-markets for C&D materials. The 2007 C&D Waste Stream Composition Study focused on types of C&D from sectors such as new construction, demolition, and remodeling. A major 2008 study researched the capacity of Seattle area C&D processing facilities. SPU also receives monthly data from the private transfer stations on amount of disposed C&D.

In 2007, SPU began tracking C&D amounts delivered to recycling facilities. We gather this information through a requirement on all recyclers doing business in Seattle. Recycling businesses must report their recycling tonnage directly to the city each year. However, many C&D recycling sites lie outside Seattle's city limits and are not required to report. Tracking C&D tonnage delivered for processing outside the city remains a challenge.

## 5.1.2 Planning Issues

The 2007 Seattle City Council Resolution 30990 (the *Zero Waste Resolution*) included a number of actions to reduce the amount of C&D waste disposed of in landfills. These included:

- Modifying the City of Seattle's Department of Planning and Development (DPD) demolition permit to allow salvage and deconstruction to more easily occur
- Examining public contracting, financial incentives or other assistance to develop more C&D processing capacity
- Assessing types of financial mechanisms that would create more incentives for more reuse or reprocessing of C&D
- Evaluating new city initiatives such as a deposit system, mandatory recycling or disposal bans to increase C&D recycling
- Evaluating if there should be a ban on the disposal of C&D recyclables at city transfer stations
- Market development, focusing on tear-off asphalt shingles

SPU and DPD carried out many of these action items. Among them were a new permit for deconstruction, and partnering with King County on new recycling market initiatives for tear-off asphalt shingles and carpet. SPU produced the facility processing capacity study in 2008, which recommended that the city proceed with processing facility certification.

A thorough appraisal of new recycling programs ruled out a deposit system. The city's DPD cannot legally charge more for permit fees than the cost of service. While SPU could implement a deposit system, it would have higher administrative costs than other approaches. Other possible approaches include mandatory recycling or banning C&D recyclables from landfill disposal.

Current planning issues and long-term goals for C&D group into four focus areas. Each focus area includes possible strategies for moving forward toward the goals.

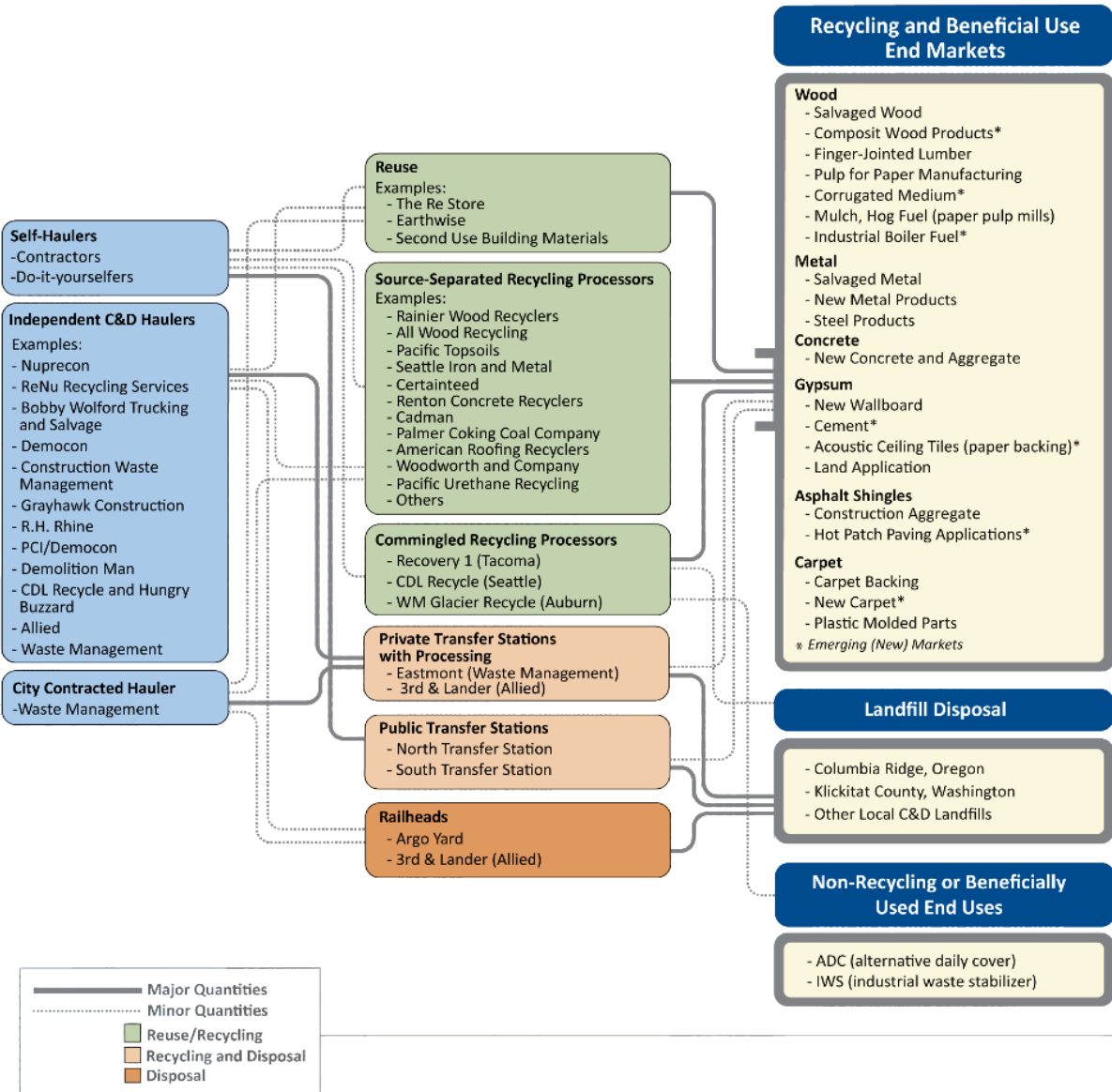
1. **Goal Setting** — What are appropriate and achievable recovery goals for C&D?
  - Develop an overall Seattle recovery goal for C&D delivered to private transfer stations for disposal
  - Set specific recovery goal targets for various C&D sectors such as new construction, demolition, and remodeling
2. **Program Strategy** — Which program strategies will lead to the most recovery at least cost to Seattle and the C&D industry?
  - Evaluate the costs and benefits of potential programs to increase recycling. These could include mandated recycling, and disposal bans on readily recyclable materials in jobsite containers. The City of Seattle could also mandate that construction wastes be delivered to transfer stations for disposal.
  - Ensure that recycling containers at C&D jobsites contain less than 10% non-recyclable materials
  - Adopt a suite of C&D recycling programs for 1) DPD building permit applicants who do not participate in Green Building programs, and 2) city transfer station customers who do small-scale home remodeling
  - Develop a process to "certify" C&D processing facilities in the region that meet Seattle's minimum recovery requirements. Direct contractors to these facilities in order to meet possible future recycling requirements and goals
  - Expand local recycling capacity in Seattle to decrease contractor travel time and vehicle greenhouse gas emissions
  - Expand the recovery of marketable C&D delivered to city transfer stations
  - Encourage deconstruction techniques for building removal rather than demolition
3. **End-Market Strategies** — How can Seattle promote robust markets for recovered materials?
  - Increase the supply of structural lumber and other salvageable commodities for reuse instead of disposal
  - Increase the supply of clean wood for recycling end-markets such as wood composite product or pulp and paper manufacturing, rather than diverting it to a lower value "beneficial use" end-markets such as industrial boiler fuel
  - Expand local processing capacity and end markets for certain C&D commodities that currently lack large, local markets, such as scrap carpet and tear-off asphalt shingles
  - Develop end-markets for difficult to recycle materials. Such materials often have a potentially hazardous attribute like lead-based paint on gypsum wallboard.
4. **Evaluation** — How can we tell if adopted strategies are working?
  - Improve reporting of how much C&D was recycled, "beneficially used " and disposed

**Chapter 5**  
Other Seattle Solid Waste Programs

Opportunities to implement programs lie at various points in C&D generation, collection, processing, and disposal (Figure 5-1). The following sections describe this flow (or system).

See this chapter’s discussion of [Rule on End-Markets](#) for what the City of Seattle classifies as acceptable recycling and beneficial use end-markets.

**Figure 5-1**  
**Flow of Seattle-Generated C&D Materials**



Note: Figure 5.1 is conceptual. The list of companies is not inclusive and shifts over time.

## Who Collects C&D and where does it go?

### Collection

Many types of collectors (or haulers) transport C&D materials. They deliver the C&D to a mix of private and public transfer and processing facilities, both inside and outside of Seattle. The term *self-haul* is used when the generator and collector of the waste material is the same person or entity. C&D collectors include:

- **Homeowners** taking remodeling debris to Seattle transfer stations.
- **C&D contractors** who do home or office remodeling and haul C&D debris to a city or private transfer station in Seattle. Waste Management and Republic Waste Services (formerly Allied Waste Services) operate the two private stations.
- **Large Independent C&D haulers** offering hauling services to construction or demolition contractors. Typically, these firms deliver C&D to private recycling facilities, often located outside Seattle. Because they receive a fee for their hauling services, these firms are not considered self-haulers. They cannot transport Seattle-generated C&D waste for disposal. They can only transport recycling.
- **City-contracted collector** of all C&D for disposal. Only the one firm holding the City of Seattle contract for this service may haul C&D bound for disposal. The city awarded this contract to Waste Management in 2007. They are the only company that can charge a fee for transporting C&D from any construction site within the city limits if the C&D is going to disposal.

C&D recyclables can be collected in either source-separated (separated onsite) or commingled (mixed materials) recycling containers. An example of *source-separated* recycling is a drop box for just clean wood waste. An example of *commingled* recycling is



a drop box for mixed recyclables such as wood waste, metal, wallboard, and packaging materials. New construction sites often use source-separated recycling containers since materials are easily set apart at each stage of building construction. Sites with limited space often use commingled boxes. By law, recycling drop boxes may contain no more than 10% non-recyclable C&D.

Usually, with demolition, some marketable materials (doors, windows, or flooring) are salvaged before the structure is removed. Demolition contractors often order a large, 100-cubic-yard intermodal container delivered to the jobsite. These wastes go directly to a railhead for landfill disposal. Sometimes structures contain a lot of potentially hazardous and difficult to recycle material. Recycling can be a major challenge when remodeling or demolishing such structures.



## Processing

A wide variety of facilities receives and processes C&D materials in the Seattle area:

- **Reuse** — Businesses for fixtures, structural lumber, metal pieces and other salvageable materials. See Chapter 3, Waste Prevention, for more detail.
- **Source-Separated** — Recycling facilities for single commodities separated at the job site, such as clean wood waste, concrete, gypsum scrap, metal or tear-off asphalt shingles. Source-separated facilities account for much of the C&D recycling in the region.
  - Often located outside Seattle and have
  - Usually very low tip fees compared to disposal
  - Very high recovery rates, around 95%
- **Commingled** — Recycling facilities for a various commingled commodities such as wood waste, metal, gypsum scrap, carpet, packaging materials and aggregates.
  - Three permitted, commingled C&D processing facilities operate in the Seattle-Tacoma area.
  - Tip fees lower than disposal fees
  - Can recycle 80 to 85% of the primarily clean, recyclable C&D loads they receive
- **Material Recovery** — Operations at private transfer stations for mixed C&D. These facilities sort loads thought to have a high percentage of recyclable materials.
  - Charge higher tip fees due to the costs of manual or mechanical sorting
  - Recovery rates vary greatly, depending on the recyclability of materials in a load
  - Loads of relatively clean materials can reach 65% recovery
- **Drop Boxes** — Public transfer stations can offer drop boxes for source-separated materials such as clean wood waste.
  - Usually a fee for recycling clean wood since the city must transport it to a processing facility

Mixed C&D loads delivered to a city transfer station currently get disposed with MSW. The city transfer stations do not have a C&D sorting system.

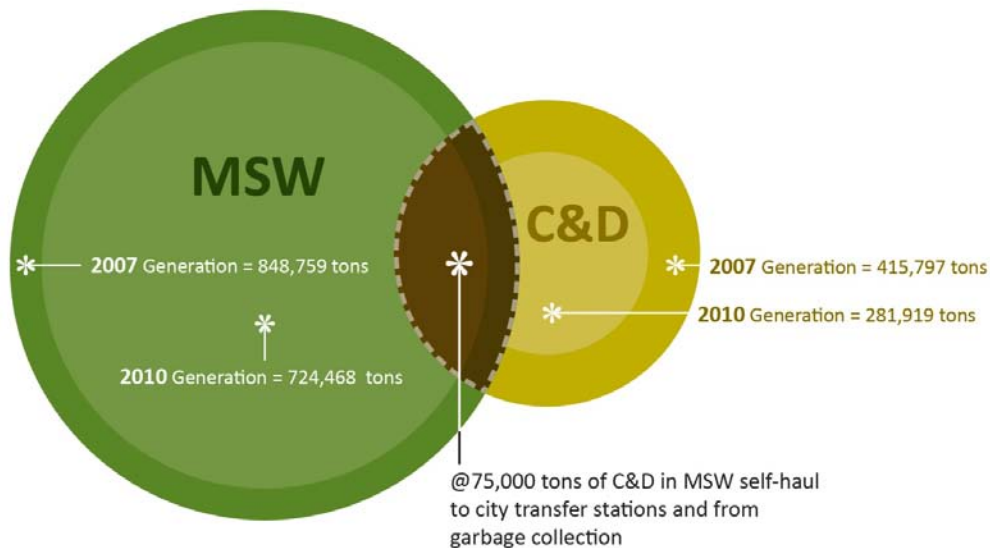
## Disposal

Most non-recyclable C&D wastes in Seattle are disposed through private transfer stations. Private transfer stations typically have lower tip fees than the public stations. They are also set up to handle large, self-unloading trucks. Two railheads in Seattle accept large intermodal containers directly—mostly from demolition projects— for transport to a landfill.

## C&D in MSW

Some C&D is not managed as just described. Instead, it becomes part of the MSW stream (Figure 5-2). Homeowners and small businesses deliver some C&D in their self-haul loads to the city transfer stations. C&D materials also turn up in curb or alley garbage containers set out for collection.

**Figure 5-2**  
**Overlap of MSW and C&D Generation in Seattle in 2007 and 2010**



## How Much C&D Does Seattle Have?

The first step in designing new programs for increasing C&D recycling is to understand how much C&D waste is generated in Seattle. This means understanding the amounts of C&D materials handled by the public and private sectors.

### C&D Recycling Rate Definitions

The categories used for calculating the C&D recycling rate are essentially the same as for the MSW recycling rate.

- **Recycling** — wastes separated for recycling or reuse
- **Beneficial Use** — discards not recycled or reused, but used for some other purpose like industrial boiler fuel. Excluded from the recycling rate, counted as diverted in the diversion rate
- **Alternative Daily Cover (ADC) and Industrial Waste Stabilizer (IWS)**  
ADC covers the active face of a landfill instead of soil. IWS provides structure in specialized landfills. Counted as disposal in the recycling rate.

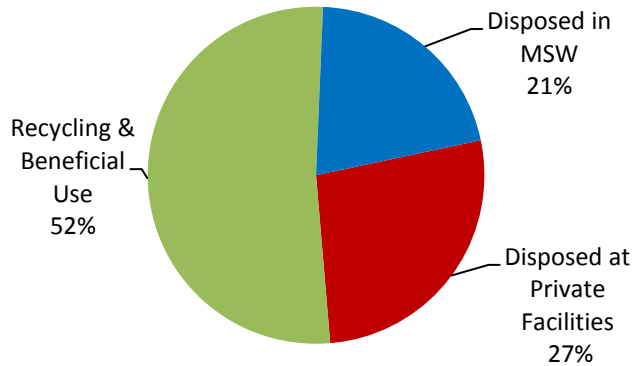
In addition to calculating the recycling rate, for C&D we calculate the "**diversion**" rate, the sum of recycling and beneficial use.

## C&D Generation with MSW

Total generation consists of both recycling and disposal components.

Analysis done on 2010 tons, that included C&D from all sources including MSW, showed about half of all C&D was either recycled or beneficially used. The other half was disposed as C&D or MSW (Figure 5-3).

**Figure 5-3**  
**C&D Generation in Seattle in 2010 All Sources**



In 2010, about 21% of all C&D entered the MSW system and was disposed. The remaining 79% of C&D (around 282,000 tons) went to:

- Private transfer stations and railhead intermodal facilities for landfill disposal (27%). This includes ADC and ISW produced by processing facilities.
- Recycling facilities that processed about 52% of the total 2010 tons for recycling and beneficial use end markets.

Of all C&D tons generated in 2010 (including the estimated MSW portion), the overall diversion rate for C&D was 52%, and 48% was disposed in a landfill.

## C&D Generation without MSW

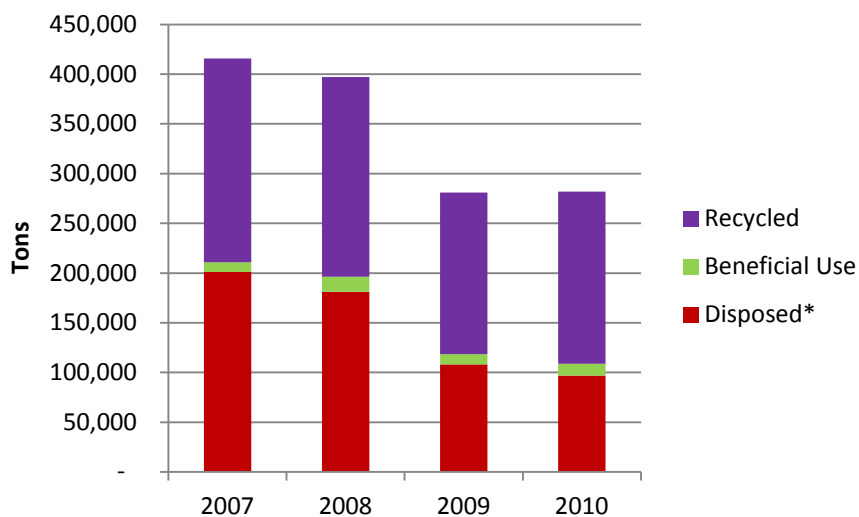
Seattle’s C&D planning focuses on the C&D stream that does not include MSW (Table 5-1). Chapter 4, Seattle’s MSW System: Managing Discards, section 4.3 addresses planning for C&D materials in MSW. The discussion from this point forward focuses on C&D without MSW. Recycling and diversion rates are much higher when MSW is excluded (Figure 5-4).

**Table 5-1  
C&D Generation in Seattle 2007 – 2010**

| Year | Total Generated | Disposed* | Recycled | Beneficial Use | Recycle Rate | Diversion Rate |
|------|-----------------|-----------|----------|----------------|--------------|----------------|
| 2007 | 415,797         | 201,156   | 204,903  | 9,738          | 49.3%        | 51.6%          |
| 2008 | 396,930         | 181,240   | 200,729  | 14,961         | 50.6%        | 54.4%          |
| 2009 | 281,081         | 108,071   | 162,648  | 10,362         | 57.9%        | 61.6%          |
| 2010 | 281,919         | 96,946    | 173,109  | 11,864         | 61.4%        | 65.6%          |

\*Disposed includes ADC and IWS. Recycling rate does not include ADC or IWS. Diversion rate equals recycling plus beneficial use.

**Figure 5-4  
C&D Recycling and Disposal Tons 2007 – 2010**

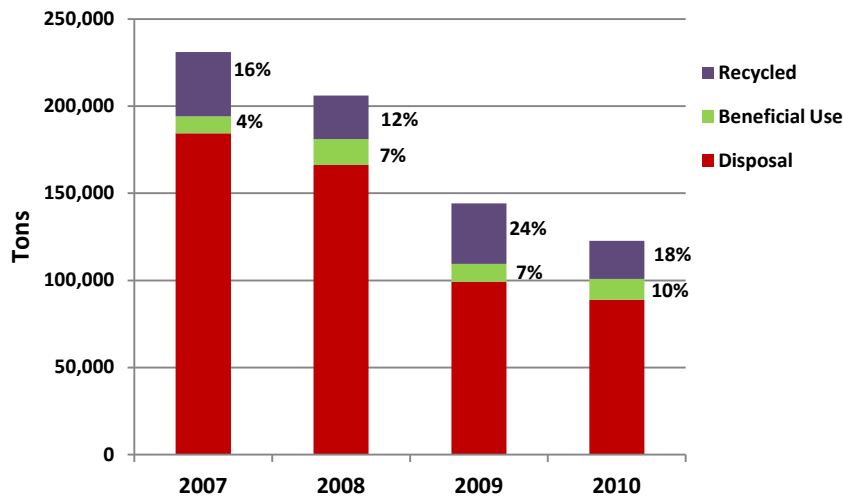


Source: City of Seattle 2007 – 2010 annual recycling report data

By far, concrete and other aggregates have the highest recycling rate of any material. In 2010, concrete and aggregates accounted for 82% of the diversion rate.

Based on 2010 analysis, after removing concrete from the recycling and disposal data, the diversion rate drops by over 75% (Figure 5-5).

**Figure 5-5  
C&D Recycling Rates without Concrete in 2007 – 2010**

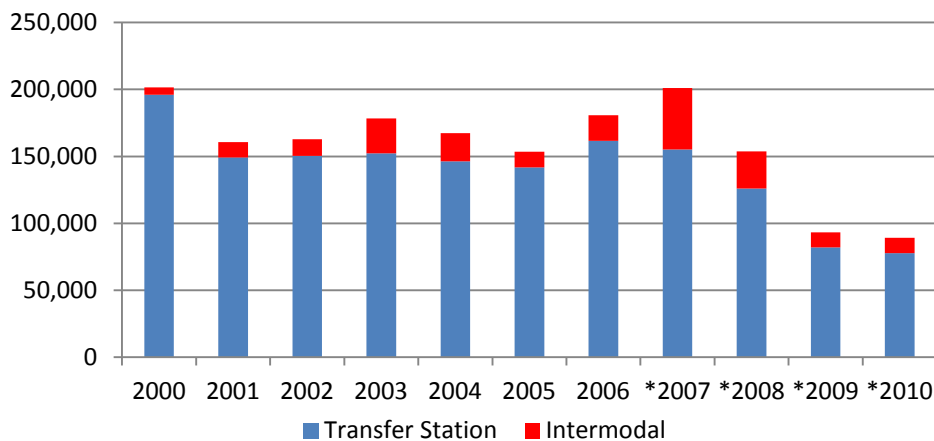


### Variability of C&D Tons

A notable feature of the C&D waste stream is how greatly it varies due to changing levels of construction activity. The high point over the last decade occurred in 2000, followed by 2007, the benchmark year for many SPU studies of C&D. The year 2009 marked the low point, when disposed C&D tons dropped by more than 50% compared to 2007.

C&D amounts delivered to the private transfer stations and intermodal facilities are shown on Figure 5-6. The blue bars are loads delivered to these facilities in trucks. The red bars show disposal loads delivered directly to railheads operated by Allied and Waste Management.

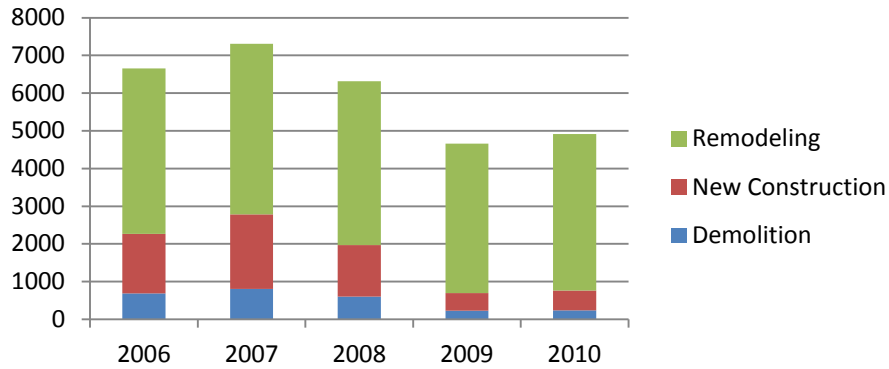
**Figure 5-6  
C&D Disposed Tons via Private Stations and Intermodals in Seattle 2000 – 2010\***



\*2007-2010 includes Third and Lander Street intermodal tons and Argo Yard. Allied and Waste Management operate the private stations.

The drop in DPD permits over the past 3 to 4 years parallels the decreases in disposed C&D for large projects. The number of permits for new C&D projects fell dramatically from 2007 to the end of 2009. The permits for remodeling remained constant by comparison (Figure 5-7).

**Figure 5-7**  
**Number of DPD Permits issued by C&D Sector**



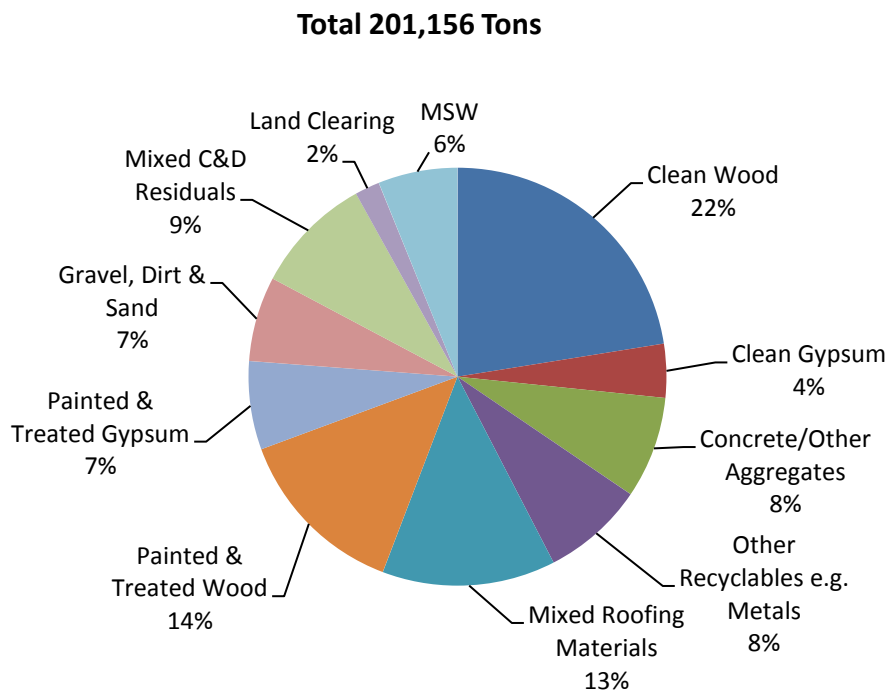
Regional economic forecasting shows a gradual rebound of construction over the next 5 years. The forecasting uses a range of variables, including Seattle and King County building permit data. Longer term forecasting expects construction projects to stay below the 2007 level.



## What is in C&D Waste?

In 2007, the City of Seattle studied the composition of the C&D waste streams delivered to private transfer stations and intermodal containers operated by Republic Waste Services and Waste Management (Figure 5-8).

**Figure 5-8**  
**Composition of C&D Disposed at Private Stations**



Source: City of Seattle 2007 C&D Waste Stream Composition Study

The 2007 study found that about 51.3 % of disposed C&D was readily recyclable. These materials included concrete, asphalt and other aggregates, clean wood, ferrous and non-ferrous metals, clean gypsum, land clearing debris and aggregates. Another 13%, such as tear-off asphalt shingles, was on the verge of being recyclable as local end uses emerge. Tear-off asphalt roofing shingles may soon be recyclable with more market development for using them in hot mix paving. About 35.7% (71,813 tons) of the C&D waste stream was non-recyclable. The non-recyclable portion was potentially hazardous or mixed solid waste.



## How Much of C&D Recycling is Recovered?

The various commodities in disposed C&D have different recovery rates (Table 5-2).

**Table 5-2**  
**C&D Recovery Rates by Material in 2010**

|                                                                     | Landfilled    | Recycled          | Beneficial Use | Recovery %   |
|---------------------------------------------------------------------|---------------|-------------------|----------------|--------------|
| Clean Wood                                                          | 21,784        | 15,420            | 9,119          | 44%          |
| Treated & Painted wood                                              | 15,646        | 0                 | N/A            | 0%           |
| Clean Gypsum Board                                                  | 4,024         | 7,094             | N/A            | 63%          |
| Painted/Demo Gypsum                                                 | 6,621         | 0                 | N/A            | 0%           |
| Roofing                                                             | 12,997        | 1,468             | N/A            | 10%          |
| Sand & Soil                                                         | 5,300         | 0                 | N/A            | 0%           |
| Concrete & Aggregates                                               | 8,049         | 151,230           | N/A            | 95%          |
| Other C&D                                                           | 9,801         | 3,244             | 0              | 48%          |
| Metal & Other Ferrous                                               | 3,812         | 4,084             | N/A            | 51%          |
| MSW Recyclables (carpet, plastic film, paper, land clearing debris) | 6,825         | carpet only<br>67 | N/A            | 1%           |
| Hazardous & Other                                                   | 4,595         | 0                 | N/A            | 0%           |
| ADC and IWS                                                         | 13,282        | N/A               | N/A            | N/A          |
| <b>Total Tons with Concrete</b>                                     | <b>96,946</b> | <b>173,109</b>    | <b>11,864</b>  | <b>61.4%</b> |
| <b>Total Tons without Concrete</b>                                  | <b>88,897</b> | <b>21,879</b>     | <b>11,864</b>  | <b>17.8%</b> |

Source: City of Seattle 2010 annual recycling report data and 2010 disposal data from private transfer stations

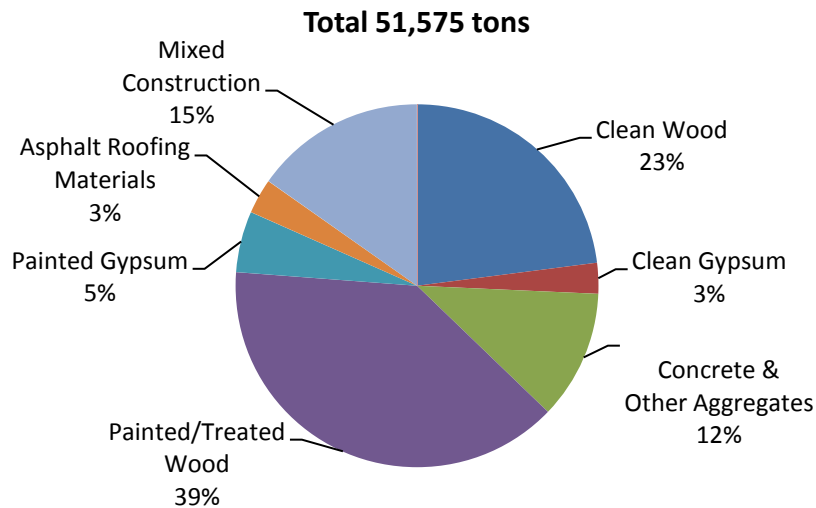
See section 5.1.4, [Recycling Program Alternatives](#), for detail on recovery of these commodities.

## C&D in MSW Self-Haul Composition

According to the 2008 composition study for the self-haul waste stream, self-haulers delivered around 51,575 tons of C&D to City of Seattle transfer stations (Figure 5-10). About 37% was readily recyclable (clean wood, clean gypsum, concrete and aggregates). Another 3%, tear-off asphalt roofing shingles, is expected to become recyclable soon.



**Figure 5-10**  
**Seattle Self-Haul C&D Waste Composition in 2008**



Source: City of Seattle 2008 Self-Haul Waste Stream Composition Study

### 5.1.3 Current Programs and Practices

The City of Seattle has developed many programs focused on providing contractor education, technical assistance, and incentives for reducing C&D generation and disposal. In recent years, we also put major efforts into market development for C&D materials with low recovery rates. SPU does this work in coordination with King County and other public agencies.

### C&D Programs Linked with Waste Prevention

Several programs important to C&D waste prevention and recycling are discussed in Chapter 3, Waste Prevention.

#### Green Building Programs

The City provides technical assistance for the building industry to support the following:

- U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) standards
- Master Builder's of King and Snohomish counties' local Built Green standards for residential construction
- Green Home Remodel Program

These green building programs have been a great incentive for contractors to divert construction wastes from disposal to recycling to gain credits for LEED and Built Green certification.

According to the City Green Building 2008 to 2009 Progress Report, the City of Seattle diverted about 30,600 tons of C&D materials to recycling through these projects. Under

the Built Green program, by 2009 about 568 tons of construction waste was sent to recycling.

## Deconstruction Permit

Deconstruction means taking apart a structure in an orderly manner to get the most reuse and recycling. In 2008, DPD started a new demolition permit for residential housing that allows more time for salvage and deconstruction. Per the terms of the permit, applicants submit a *waste diversion plan* that DPD must approve. The plan shows how the project will meet minimum salvage and deconstruction requirements. Across 2009-2010, 10 buildings were removed through deconstruction permits.

## Deconstruction Research

The city has done research on deconstruction to see how more of it can be encouraged. A series of pilots over 2007 to 2009 removed single-family houses using deconstruction techniques. Broadcasting education materials to the building community was a key aspect of the pilots. In 2009, SPU developed a business plan model for a Hybrid Deconstruction Center. Such a center would accept sections of structures for taking apart to recover materials. A Washington State Department of Ecology Coordinated Prevention Grant funded the business plan model. See Chapter 3, Waste Prevention, for more detail on the model and other sustainable building programs.

## Recycling Technical Assistance for Contractors

The Resource Venture, SPU, and King County Green Tools Program websites all have information on where to recycle various types of materials. A published [King County/Seattle Recycling Directory](#) is also available. The city used to offer onsite recycling help through the Resource Venture. These contracted services ended in 2008 due to budget cuts.

## Market Development

Market development works to develop local processing capacity and end-markets. Targeted C&D materials for market development include scrap carpet and asphalt shingles.

A carpet facility would separate the face fiber from the backing to recover commodities such as different types of nylon. The nylon can be used in new carpet or a variety of plastic molded products.

To develop a statewide market of tear-off asphalt shingles, the city has supported the [King County Linkup Program's](#) efforts on this material. These efforts include a major demonstration project by King County Roads Division. In this project, the process blends shingles into a hot mix paving application. State and local agencies, paving companies, and recycling processors all took part in developing material specifications. King County paved a 4-mile stretch of roadway with various mixtures of recycled asphalt shingles in 2009. King County will monitor the demonstration project over several years. If successful, the program will significantly expand the use of tear-off asphalt shingles.

Chapter 3, Waste Prevention, contains additional discussion of Green Building, Deconstruction, Contractor Technical Assistance, and Market Development programs.

## Ban on Disposal of Asphalt Paving, Bricks and Concrete

In March 2011, the Seattle City Council passed Ordinance 123553. The ordinance forbids disposing asphalt paving, bricks, and concrete in any type of garbage container at construction sites. It also forbids disposing the same materials at private or public transfer stations. The prohibitions start in 2012. The city will conduct education and outreach about this new requirement in 2012. Penalties may apply in 2013. These materials already see a very high rate of reuse or recycling. In addition, public construction projects are required to keep them out of the garbage. Exceptions to this disposal ban include painted materials, those made with hazardous constituents, or those present only in very small quantities.

## City of Seattle Regulations and Collection Contracts

Washington State law assigns primary responsibility for solid waste management to local government. This responsibility includes the collection, transfer, and disposal of solid waste. It also includes recycling and waste prevention. When the City of Seattle took control of its commercial waste stream in 2001, it became responsible for regulating C&D waste hauled for disposal. Seattle Municipal Code 21.36.012(5) states that materials are considered the “City’s waste” if they contain more than 10% by volume of non-recyclables. The following lists City of Seattle regulations that govern collection contracts:

- **Hauling of C&D Materials:**
  - **Hauling for Recycling** — Any company is allowed to collect materials destined for recycling, including recyclable or beneficially used C&D. However, the collected materials may contain no more than 10% non-recyclable or non-beneficially used material, by volume. Recycling collection containers must be clearly labeled. C&D generators save money if they recycle because they avoid city and state solid waste (garbage) taxes.
  - **Hauling for Disposal** — In 2008, the city awarded an exclusive contract to Waste Management for hauling C&D disposal waste. Businesses that haul their own waste, or haul wastes that result from another service provided by the business, are exempt from using this contract. For example, roofing companies usually haul tear-off asphalt shingles from their own jobs.
  - **Statewide Rule on Jobsite Containers** — A recent statewide rule requires jobsites to place a clearly labeled garbage container to keep contamination in recycling containers to a minimum.
- **Disposal Flow Control** — City of Seattle requirements govern where C&D disposal wastes can go (known as *destination* flow control).
- **Transfer Tax Applied to Jobsite Intermodal Containers of C&D** — A transfer tax now applies to the intermodal containers of C&D loaded at job sites and delivered to Seattle's two railheads for landfill disposal.
- **Rule on End-Markets for Recycling and Beneficial Use** — Seattle Municipal Code (SMC) 21.36.010 (9) allows the Director of SPU to define what counts as "beneficial use." SPU's definition of "beneficial use," as well as "recycling" and "disposal," is set down in Administrative Rule #SPU-DR-01-07. Examples of *recycling* end-markets include concrete made into new concrete, wood waste made into paper pulp for paper

products, and gypsum wallboard reprocessed into new wallboard. An example of *beneficial use* is unpainted and untreated wood waste chipped and sent to an industrial boiler for energy recovery. The Washington State Department of Ecology may also approve a specific use as “beneficial use” under WAC 173-350-200. *Disposal* includes using mixed C&D at a landfill as alternative daily cover for garbage, and as industrial waste stabilizer placed in industrial waste landfills. Disposal also includes energy recovery at a waste-to-energy facility.



## 5.1.4 Alternatives and Recommendations

### C&D Alternatives Development

The process to develop C&D recommendations involved two stages of stakeholder outreach and econometric modeling.

#### Stakeholder Feedback Phase I

SPU discussed program options with industry stakeholders during the fall of 2010. Alternatives included a disposal ban on asphalt paving, bricks and concrete; mandatory recycling for all DPD applicants, with diversion levels set for different categories of projects; and C&D processing facility certification.

Stakeholders did not support mandatory recycling coupled with all DPD permits—particularly if tied to a project receiving its Certificate of Occupancy. Project managers rely on haulers and facilities to provide the proper reporting. The haulers and facilities usually don’t have the reports ready until after DPD issues a Certificate of Occupancy.

Stakeholders favored the idea of facility certification. A certified facility would meet recycling rate and other standards. Stakeholders further suggested a third party might best verify facilities for the program, instead of the city. Certification would increase the accountability of facilities. Stakeholders viewed this as a better first step compared to starting with mandated recycling rates on projects.

Another option offered by stakeholders was to set a requirement for sorting all C&D waste before any goes to disposal. This would shift the focus away from sorting at job sites, to facilities and their sorting efficiencies.

SPU used this phase of stakeholder feedback to shape further work on potential C&D recycling programs.

#### Recycling Potential Assessment Analysis

The first phase of stakeholder input gave SPU information to help figure out potential C&D recycling program options to analyze. The analysis used the same modeling tool as used for MSW recycling programs (Table 5-3). The model analyzed variations on

mandatory recycling percents, certain materials banned from the garbage, and enhanced outreach. Almost all options included a certification program (that a processing facility meets some level of set recycling standards).

**Table 5-3**  
**C&D Recycling New Program Evaluations for Seattle**

|                 | # | Program Options                                                                                    | Recycling Rate* | Additional Tons Recycled/Year* |
|-----------------|---|----------------------------------------------------------------------------------------------------|-----------------|--------------------------------|
|                 |   | Baseline Program – Expanded Voluntary + Status Quo                                                 | 58.2%           |                                |
| <b>Basic</b>    | 1 | Mandatory Recycling for All DPD Permittees with Report                                             | 70.0%           | 17,462                         |
|                 | 2 | Mandatory Recycling for Only New Construction and Demolition with Report and Diversion %           | 69.0%           | 14,149                         |
|                 | 3 | Mandatory Recycling for All DPD Permittees with Report and Meeting Diversion %                     | 71.1%           | 21,279                         |
| <b>Advanced</b> | 4 | Bans Beyond Asphalt Paving, Bricks and Concrete for All DPD Permittees with Report                 | 72.0%           | 23,634                         |
|                 | 5 | Bans Beyond Asphalt Paving, Bricks and Concrete for All DPD Permittees with Report and Diversion % | 74.2%           | 31,769                         |
|                 | 6 | All Waste Sorted Before Disposal for New Construction and Demolition with Report                   | 70.5%           | 19,076                         |
|                 | 7 | All Waste Sorted Before Disposal for All DPD Permittees with Report                                | 75.3%           | 35,244                         |

\*By the year 2020

SPU analysis of the C&D program options shown in Table 5-3 assumed the levels of certification shown in Table 5-4.

**Table 5-4**  
**Levels of Facility Certification in Seattle C&D Program Options**

| Program Option         | Report Tonnages Recycled and Disposed of to City | Minimum Recycling Requirements | Sample Residuals for % of Targeted Recyclables |
|------------------------|--------------------------------------------------|--------------------------------|------------------------------------------------|
| Status Quo             | Only if in City                                  | No                             | No                                             |
| Basic Certification    | Yes, even if outside of City                     | Yes                            | No                                             |
| Advanced Certification | Yes, even if outside of City                     | Yes                            | Yes                                            |

SPU evaluated the model’s results in combination with Phase 1 stakeholder input. This process resulted in the C&D recycling recommendations put forward in the August 2011 “Preview” Draft of this Plan. SPU then returned to stakeholders for more review and feedback.

## Stakeholder Feedback Phase 2

After releasing the 2011 Preview Draft of Seattle’s Solid Waste Plan revision, SPU carried out a public review process to get feedback on the Plan’s recommendations. The review process included a separate, parallel, process for C&D recommendations. SPU focused its C&D outreach on construction trade groups, property managers, recycling haulers, and processing facilities. We used meetings, forums, newsletter articles, and the Plan website to share information and gather feedback. The C&D presentations and feedback are compiled the “2011 Stakeholder Outreach and Responsiveness Summary” referenced in Appendix C: Public Involvement.

Stakeholders generally supported third-party certification of facilities. They also thought the C&D sector could achieve the overall citywide goal to recycle 70% of C&D by 2020—even with market fluctuations. As for overall strategies, they preferred the option that included landfill bans on target C&D materials, with project recycling reports due after getting a final permit. As in Phase 1, stakeholders did not favor linking mandatory recycling reports with Certificates of Occupancy.



### Stakeholder Issues

- Need for flexibility in implementing the disposal bans on targeted materials, due to the volatility of end markets for certain commodities like wood waste.
- Need for SPU to clearly spell out how it will carry out the education and enforcement phases of the materials bans at construction job sites and transfer stations.
- Cost of compliance for smaller construction projects
- Adequacy of local recycling infrastructure for materials subject to disposal bans
- Importance of market development and public agency procurement of materials with recycled content
- Cost of third party certification to smaller facilities
- Coordination needed between public agencies involved with permitting
- Space constraints for multiple recycling containers at Seattle construction job sites. Whether a one-box option for all C&D (recyclable and not) would be permitted
- Differing perceptions of the 90/10 Hauling Rule. Some view it as a deterrent to recycling. Others see it as an important tool for reducing "sham" recycling

For the preliminary draft version of the Plan, SPU modified the C&D recommendations to push out the start dates for disposal bans on metal, cardboard, and clean wood. This will give time to develop the certification program fully. The changes also allow time for wood waste end markets to recover from current volatility.

## **C&D Recommendations**

Recommendations to increase C&D recycling include continuing programs and new initiatives, including bans. The new actions are needed to increase Seattle's C&D recycling rate. They mainly reflect the chosen set of programs in Option #4 of Table 5-3

### **Create Overall C&D Recycling Goal**

Set a recycling goal of 70%, citywide, by 2020. Adding the recommended new programs will increase C&D recycling to the new goal. Forecasting on current "baseline" programs showed those programs would only maintain current recycling levels if left status quo.

### **Continue Existing Programs**

Most baseline C&D programs overlap with information presented in waste prevention programs. They need to continue to achieve C&D recycling goals.

- **LEED and Built Green:** continue promotion and technical support for voluntary, industry-driven programs for material reuse and recycling. Work with U.S. Green Building Council to change what gets counted as recycling for waste diversion credits (e.g. no ADC)
- **Salvage:** continue and expand pre-demolition voluntary salvage assessments
- **Hybrid deconstruction:** develop training programs for hybrid deconstruction techniques for residential and small commercial structures to reduce traditional demolition.

### **Implement Facility Certification**

SPU will develop, with private processors, an "advanced level" facility certification process in 2012. The program's components will include:

- Expectations for facilities to achieve compliance with all applicable regulations
- Standardized verification methods for recording facility inputs and outputs
- Requirements to report on amounts and types of materials handled by the facility
- Minimum recycling levels
- Sampling protocol for residuals – measuring the percent of targeted materials left in the residual after processing
- Web page listing of certified facilities for contractors to use

## Implement Disposal Bans on Target Materials

The city will ban certain C&D materials from being disposed as garbage in a landfill. They will phase in as shown in Table 5-5. Several of the targeted materials have similar bans in the MSW recycling recommendations, but with different timing.

**Table 5-5  
Seattle C&D Material Ban Schedule**

| Effective Year | 2011 Status | Material                                                                                |
|----------------|-------------|-----------------------------------------------------------------------------------------|
| 2012           | Adopted     | Asphalt Paving, Brick, Concrete                                                         |
| 2013           | Recommended | Metal<br>Cardboard<br>Plastic Film Wrap<br>Carpet<br>Scrap Gypsum from New Construction |
| 2014           | Recommended | Clean Wood<br>Tear-Off Asphalt Shingles                                                 |

All bans will begin with one year of education before the start of enforcement at construction job sites and facilities. The SPU Director will hold authority to delay or rescind disposal bans in the event of local recycling facility closures, or if end markets for targeted materials collapse. Work to develop and maintain end markets also overlaps with some activities described in Chapter 3, Waste Prevention.

### Require DPD Permit Holders to Report

Construction and demolition contractors, as a term of their Seattle project permit, will need to file a recycling report after receiving their Final Permit. The report will document where materials from the project were taken.

## 5.1.5 Monitoring and Performance Measurement

The annual City of Seattle recycler reporting will be used to measure progress towards a 70% recycling goal for 2020. As a condition of certification, certified processing facilities located outside Seattle will also be required to report regardless of where they are located. The city will also gauge the effectiveness of its disposal bans for C&D materials at both the private and City of Seattle transfer stations.

A C&D Waste Stream Composition Study will be conducted in 2012 at the public transfer stations and in 2013 at the private stations to set a baseline for the major components of the disposed C&D waste stream. The last waste composition studies for C&D were conducted in 2007 at the private stations, and in 2008 at the public stations. Studies after 2013 will be considered for C&D monitoring and program planning.

Construction sites and processing facilities will also be inspected to ensure that significant amounts of targeted materials do not end up in either disposal containers or disposal areas of transfer stations or recycling facilities.



## 5.2 HISTORIC LANDFILLS

Until the 1960s, Seattle disposed its solid waste at various landfills within the city limits. Between 1966 and 1986, the City of Seattle operated two major landfills south of Seattle: Midway and Kent Highlands. The Midway Landfill accepted garbage until October of 1983 and Kent Highlands Landfill through 1986.

Between 1986 and 1991, Seattle took its solid waste for disposal at King County's Cedar Hills Landfill. From 1991 to the present, the city ships its solid waste to the Oregon Columbia Ridge Landfill, which Waste Management owns and operates.

After Midway and Kent Highlands closed for accepting waste, they went through the process for environmental closure. During the 1980s, the U.S. Environmental Protection Agency (EPA) added the Midway and Kent Highlands landfills to its Superfund list as Washington State Department of Ecology leading Superfund sites. Cleanup undertaken through legally binding agreements with the Washington State Department of Ecology (Ecology) was completed at Midway in 1991 and at Kent Highlands in 1995. Cleanup for these two landfills cost more than \$110 million. SPU continues to monitor the landfills per agreements with Ecology.

In 1984, Public Health - Seattle & King County assessed 12 historic landfills in Seattle. The study's objective was to determine if any public health problems existed at the sites. The assessment included sampling for the following:

- Methane gas
- Non-specific organic and non-organic trace gases
- Water quality (in seepage and surface water), including pH, temperature, dissolved oxygen, conductivity, and turbidity

The assessment concluded that no further action was needed at Green Lake, Judkins Park, the Arboretum, Rainier Playfield, and Sick's Stadium. It recommended specific actions for the remaining sites (Interbay, Genessee, Montlake, Haller Lake, West Seattle, South Park, and 6th Avenue South). The direct actions recommended in the 1984 study have been implemented or are underway.

Annual operating costs for all post-landfill closure activities are about \$900,000. There are also landfill capital projects in the city's 6-year Capital Improvement Plan. Anticipated capital costs between 2011 and 2015 are shown in Table 5-6-and included in Chapter 6, Administration and Financing, section 6.3.

**Table 5-6**  
**Six-year Budget to Maintain and Monitor Historic Landfills in Seattle**

| Project                             | 2011      | 2012      | 2013         | 2014        | 2015 | 2016 |
|-------------------------------------|-----------|-----------|--------------|-------------|------|------|
| Kent Highlands Flare Replacement    | \$450,000 | \$50,000  |              |             |      |      |
| South Park Development              | \$690,000 | \$667,000 | \$10,082,000 | \$9,981,600 |      |      |
| Midway Flare Improvements           |           | \$46,000  |              |             |      |      |
| Historic Landfill Improvements      | \$25,000  |           |              |             |      |      |
| Backhoe Replacement                 | \$200,000 |           |              |             |      |      |
| Kent Highlands North Pond Diversion | \$10,000  | \$170,000 |              |             |      |      |

## 5.2.1 Recommendations from 1998 Plan and 2004 Amendment

| Recommendations                                                                                                                          | Status                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1998 Plan</b>                                                                                                                         |                                                                                                                                                                                                                                                                                                                                              |
| Continue monitoring per regulatory agreements                                                                                            | Regular 5-year Ecology reviews of groundwater and surface water conditions at both landfills:<br>2008 Kent Highlands review validated current remedy protective of human health, and no specific actions required<br>5-year review for Midway completed 2010 validated remedy is protective of human health and no specific actions required |
| Consider options for recreation after 30-year monitoring period                                                                          | Monitoring period still under way                                                                                                                                                                                                                                                                                                            |
| Respond to problems at historic landfills case-by-case                                                                                   | Done                                                                                                                                                                                                                                                                                                                                         |
| <b>2004 Amendment</b>                                                                                                                    |                                                                                                                                                                                                                                                                                                                                              |
| Continue monitoring per regulatory agreements                                                                                            | Regular 5-year Ecology reviews of groundwater and surface water conditions at both landfills:<br>2008 Kent Highlands review validated current remedy protective of human health, and no specific actions required<br>5-year review for Midway completed 2010 validated remedy is protective of human health and no specific actions required |
| Perform an assessment of old in-City of Seattle landfills to determine if any additional work is needed                                  | Landfill gas monitoring and targeted gas control completed at Genessee 2006. Final report submitted to Public Health - Seattle & King County 2007 showed landfill gas controlled<br><i>South Park Landfill Agreed Order with Ecology</i> signed in 2008 to complete RI/FS studies to support upcoming final site remediation                 |
| Safely manage WSDOT and City of Kent construction activities that may affect these landfills                                             | Addressed next two items for:<br>1. Relocate Kent Highlands leachate forcemain<br>2. Refuse removal for WSDOT I-5 construction at Midway                                                                                                                                                                                                     |
| Relocate Kent Highlands leachate force main, decommission some probes and wells per agreement with City of Kent construction of 228th St | Kent Highlands leachate forcemain crossing the Green River replaced 2006. New line activated 2008 after leachate pump station replaced                                                                                                                                                                                                       |
| Refuse removal, gas well removal and relocation of storm water facilities in preparation for the WSDOT I-5 construction at Midway        | Preliminary engineering for waste removal at Midway to accommodate WSDOT I-5 construction completed 2006. Project has been delayed due to lack of state funding<br>Midway gas extraction wells on I-5 right-of-way removed in 2007 because no longer needed                                                                                  |
| Complete discussions with Ecology per recent Kent Highlands review. Implement any required activity                                      | Ecology concerns from 2003 5-Year review addressed in 2007 work plan. Part of work plan modified stormwater pond to improve stormwater quality<br>Modifications successful and 2008 review for Kent Highlands validated current remedy protective of human health. No specific actions required at this time                                 |
| Continue to respond to questions on old in-city landfills                                                                                | SPU continues to consult on city projects located on or adjacent to known historical landfills                                                                                                                                                                                                                                               |

WSDOT: Washington State Department of Transportation

### Other Actions Since 2004

The City of Seattle has made other improvements at the Kent Highlands and Midway sites:

- A failing storm drain at Kent Highlands partially replaced in 2009
- A new records retention facility constructed at Kent Highlands to maintain the administrative records for the Kent Highlands and Midway landfills in 2009
- Emergency generators purchased 2009 to allow continued operation of the gas extraction systems at Kent Highlands and Midway, leachate treatment and pump station at Kent Highlands, and the landfill field office at Kent Highlands

## **5.2.2 Planning Issues**

Both EPA and Ecology have adopted greenhouse gas reporting requirements. However, the requirements do not apply to historical landfills in Seattle. SPU will evaluate the applicability to the former Midway and Kent Highlands landfills and prepare the estimates in 2011.

The Potentially Liable Parties at the South Park Landfill have entered into an Agreed Order with Ecology to complete a Remedial Investigation/Feasibility Study for the site and select a permanent remedy under the Model Toxics Control Act. This work will continue through 2015. The cleanup of the city-owned portion of the landfill is part of the redevelopment of SPU's South Recycling and Disposal Station.

## **5.2.3 Current Programs**

Dedicated SPU staff monitor the Kent Highlands and Midway sites and facilities for:

- Gas extraction and flare system to ensure proper operation cover and perimeter security, inspecting to ensure they are intact, including general maintenance
- Surface water quality testing
- Groundwater sampling and reporting, and ensuring the test wells are in good order
- Ensuring leachate discharge to the sanitary sewer meets permit limitations
- Pump maintenance, for groundwater, surface water, and leachate

SPU will replace the flare at Kent Highlands to better match decreasing landfill gas flows. During the flare replacement, we will evaluate the alarm systems at all landfill pump stations for upgrades.

At the Interbay and Genessee historic landfills, SPU crews operate and maintain gas control systems, and monitor and evaluate methane levels along site perimeters.

## **5.2.4 Alternatives and Recommendations**

No major new initiatives are being considered for Seattle's historic landfills. Instead, it is more a matter of staying the course on the decisions and investments that have already been made. For the planning period, SPU will:

- Continue to monitor and maintain Kent Highlands and Midway in accordance with regulatory requirements and to the satisfaction of adjacent communities
- Reduce monitoring requirements as appropriate, with regulatory concurrence
- Continue to monitor and control landfill gas at Interbay and Genessee

- Respond to problems at historic in-city landfills on a case-by-case basis
- Pursue possible site de-listing and future beneficial use of the Kent Highlands and Midway landfill sites. In 2007, EPA funded and completed an evaluation of future uses of these sites. As development in the area increases, these sites may become viable for future economic development.

## 5.2.5 Monitoring and Performance Measurement

The Washington State Department of Ecology formally tracks the performance of landfill closure programs for both Midway and Kent Highlands in a 5-year review cycle. Public Health - Seattle & King County monitors performance at the historic Seattle landfills.

## 5.3 CLEAN CITY PROGRAMS

Clean City is a set of programs that provides tools to abate graffiti, illegal dumping, and litter. The programs are an extension of traditional City of Seattle solid waste services for keeping streets and neighborhoods clean and healthy by collecting garbage and encouraging environmental awareness. Clean City programs:

- Make Seattle a more livable place by creating cleaner and more secure communities
- Encourage urban stewardship

### 5.3.1 Recommendations from 1998 Plan and 2004 Amendment

The key goal for the Clean City programs is to keep Seattle's neighborhoods clean and safe by partnering with communities. A key objective was to increase the efficiency and fairness of services.

The 2004 amendment included three strategic focus areas for Clean City programs:

1. Maintain existing service levels for graffiti removal, litter pick up, and response to illegal dumping
2. Evaluate strategies for increasing efficient, effective, and equitable service delivery
3. Fully implement the public place recycling program

See section 5.3.3, [Current Programs and Practices](#), for more detail on progress on these areas.

### 5.3.2 Planning Issues

Clean City programs face two major challenges. First, City of Seattle general tax revenues pay for the programs, making the programs compete with other General Fund activities, such as public safety and human services. SPU projects significant ongoing budget shortfalls in the years following the 2007 – 2012 Global Recession, which may result in resource restrictions for the Clean City programs.

Second, increasing population diversity, including minority and immigrant communities and non-English speakers, increases the challenge of ensuring equitable services to all citizens. Program messages must include and be delivered in culturally relevant ways. The goal of such

messaging is to promote collaboration and civic engagement that include a wide range of Seattle's diverse populations.

At the same time, the City of Seattle's anti-graffiti program may benefit from other recent developments. Ongoing interdepartmental and inter-agency collaboration may leverage results for cleanup, outreach, and apprehension. Program enhancements may include recruiting more volunteers for graffiti cleanup, and strategic partnerships for outreach to repeatedly tagged areas and increased surveillance and apprehension.

### 5.3.3 Current Programs and Practices

Clean City programs are grouped into four areas: anti-graffiti, illegal dumping, litter, and community cleanup.

#### Anti-Graffiti

The success of the anti-graffiti program relies on cooperation and rapid abatement (removal or painting over) by the various responsible parties. Those involved in graffiti abatement include public and private property owners, volunteers, non-profit and community organizations, city departments, and other government entities. SPU provides five main, ongoing roles:

- **Hotline** — The Hotline is a citywide central point for reporting graffiti on public property, or on private property where the graffiti has persisted for a period of time. Customers may reach the Hotline through the [online graffiti report](#) form, or by calling the graffiti report line at (206) 684-7587. Hotline staff route public property reports either to the entity responsible for abatement or to code enforcement staff who are responsible for graffiti nuisance. Hotline staff is required to dispatch reports within 1 business day.
- **Abatement** — SPU's "Graffiti Rangers" abate graffiti on SPU-assigned properties. The Graffiti Rangers take care of reported graffiti and any they discover while working within specified geographic boundaries. Abatement includes painting, chemical removal and sandblasting. The citywide abatement performance target for obscene and hate graffiti is 1 business day. The performance targets for other reported graffiti are:
  - 90% of reports on SPU-assigned properties (light poles, street side litter cans, etc.) cleaned up within 6 business days of receiving the report
  - 90% of reports on roadway structures (bridges, retaining walls and stairwells) cleaned up within 10 business days of receiving the report
- **Enforcement** — Enforcement of the city's graffiti nuisance code (SMC 10.07) follows a prescriptive code process. The process uses pre-determined step-by-step actions that are applied the same to all. It requires property owners to promptly abate graffiti or be subject to fines. The performance target for enforcement staff includes identifying the property owner(s) and initiating the code notification process within 5 working days of receiving a hotline report.
- **Anti-graffiti Outreach and Education** — Outreach and education includes recruiting volunteers and coordinating abatement and community outreach activities. Program staff track and report the number of volunteers, volunteer hours dedicated to abatement efforts, and a summary of community outreach efforts.

- **Business Improvement Area (BIA) Grants** — BIA grants provide supplemental funding for cleaning contracts for graffiti removal within BIA areas.

## Anti-Graffiti Progress on Recommendations

The anti-graffiti program has made good progress within the three focus areas outlined in the 2004 amendment:

- Service levels have been upgraded so that all city departments share common performance targets
- Strategies to improve service equity have been evaluated and implemented
- Efficiency and effectiveness strategies have been evaluated and implemented

The following initiatives benefitted the anti-graffiti program and the illegal dumping program:

- **Benchmark Studies** — Assessed programs in peer communities, identified best management practices, and incorporated program improvements based on studies.
- **Database Development** — Improvements 1) eliminated system problems that hindered staff productivity, 2) resolved issues of quality, duplication, and incompleteness, 3) automated work orders, and 4) automated tracking reports that were previously manual processes. Reports now support strategic objectives of trustworthy data and easier data sharing.
- **Report Hotline** — Upgraded reporting phone line to be answered live during normal business hours.

To evaluate service delivery, staff mapped service provision by geographic area to assess if service delivery is equitable across Seattle communities. Focusing work within geographic sectors continues. See this chapter's section on [Illegal Dumping](#), for more detail.

## Anti-Graffiti Program Changes

Since 2004, several city events resulted in anti-graffiti program changes not anticipated in the 2004 amendment. These events changed SPU's services as follows:

- Due to General Fund reductions, SPU was directed to incorporate graffiti abatement on roadway structures in 2006. The roadway structures work is a significant amount of the Graffiti Rangers' workload.
- The 2007 to 2008 budget process resulted in added functions, but not as requested. The original budget proposal included funding for a citywide 48-hour graffiti cleanup policy on public property, by adding General Fund resources to multiple City of Seattle departments. While the budget was maintained for SPU, the budget for additions in other city departments was cut. Rather than enhance the service level for SPU only, the additional SPU resources upgraded the graffiti hotline to a live operator (from a voicemail system) and incorporated one staff position to focus on education and graffiti prevention.

- In 2008, the Mayor's Office sponsored a Customer Service Improvement project, which focused on graffiti removal on public property. A task force developed recommendations to provide external customers a more responsive and consistent approach to graffiti removal across city departments. Specific recommendations that affected SPU services include:
  - Promotion of the Graffiti Report Line (hotline) as the central citywide reporting conduit
  - Establishment of common service levels across city departments. This resulted in a more aggressive performance target (from 10 to 6 business days) for most public infrastructure
  - Establishment of common metrics across city departments
  - Development of ongoing, regularly-scheduled interdepartmental meetings of dedicated field abatement staff to coordinate efforts and discuss challenges and opportunities

## Illegal Dumping

Illegal dumping program staff respond to reports of illegally dumped materials on public property and coordinate cleanup with Washington State Department of Corrections (DOC) work crews. The program's performance target is to clean up 90% of all reported illegal dumping within 10 days. Program staff also track and report the pounds of garbage and recycling collected by DOC crews. Seattle's DPD responds to waste accumulation and "junk storage" issues on private property.

### Illegal Dumping Progress on Recommendations

Most of the illegal dumping program's progress on the recommendations from the 2004 plan is described above under [Anti-Graffiti](#), including benchmarking, hotline improvements and database development. Additionally, this program found ways to leverage resources by developing an interdepartmental agreement for cleanup of illegally dumped materials too large or heavy for regular (DOC) cleanup crews.

### Illegal Dumping Changes

SPU sponsored a customer service pilot project, which was not planned in the 2004 Amendment. To improve clean up efficiency, illegal dumping staff developed and implemented a "direct dispatch" pilot. Direct dispatch meant sending out cleanup crews before the reported illegal dumping sites were inspected. The pilot lasted 8 months, ending after an evaluation phase. DOC crews were able to clean up only 31% of the direct-dispatch cases, resulting in lower productivity for all DOC cleanup cases. The pilot also resulted in putting higher priority on cleaning up mundane and non-hazardous items such as mattresses, sofas, and chairs. These types of cleanup cases are the most fitting to defer while cleaning up cases that are more complex, or potentially hazardous to human health and the environment.

## Litter

SPU provides several programs designed to reduce ground litter and/or provide disposal options for incidental litter. Programs include:

- **Adopt-a-Street** — offers residents, businesses, and community groups tools to collect ground litter. Volunteers can conduct a one-time cleanup or agree to adopt 1 mile or more for a minimum of 2 years. The city provides collection supplies, free solid waste disposal, and street signs that credit 2-year adopters. Program staff track and report the number of Adopt-a-Street volunteers, and volunteer hours dedicated to ground litter collection.
- **Street Side Litter** — provides collection and disposal of garbage put in containers located along city streets in business areas. Program includes about 900 collection cans for litter from pedestrians. Program staff track and report the total number and location of collection cans, service frequencies and contractor performance (number of missed collections).
- **Public Place Recycling** — program in Seattle business areas, to strategically pair street side litter cans with a recycling option for beverage containers. About one-third of all street side litter cans are paired with a recycling can. Program staff track and report the total number and location of collection cans, number and location of cans that exceed acceptable contamination level, and contractor performance.
- **Litter Collection in Parks** — provides collection and disposal of publicly-generated garbage placed in more than 3,000 cans located in city parks. Collects recyclables from select locations in outdoor open spaces. Program also supports ground litter collection in downtown retail core parks. SPU and Seattle Parks and Recreation have developed a detailed agreement that identifies costs related to these services. The agreement requires tracking and reporting of costs associated with labor, equipment, and materials.
- **Secured Load Requirements** — Roughly 40% of litter on Washington State highways comes from [unsecured loads](#), or vehicle loads that are not tied, covered or properly confined. In addition to creating litter issues, road debris causes about 400 accidents on Washington State highways every year. To reduce litter and road debris, state and local law requires vehicle operators to secure loads to prevent spillage while the vehicle is moving (RCW 46.61.655 and SMC 21.36.450). Vehicle operators will be charged an additional fee at all Seattle and private transfer stations for unsecured loads.

### Litter Progress on Recommendations

Progress on the 2004 recommendations includes maintaining service levels and improving service delivery:

- **Parks Litter** — Assessed program to determine costs and developed clear and detailed scope of work. Worked to document responsibilities and associated funding into formal agreement.
- **Streetside Litter** — Developed guidelines for can siting and reallocation. Transitioned collection to the City of Seattle's solid waste contractors to increase efficiency.



A further recommendation was to implement fully the public place-recycling program. SPU's 2003 plan to reach 60% recycling committed us to fully implementing this recycling program. The program pairs, in heavy pedestrian areas, about 300 streetside litter cans with cans that accept beverage containers for recycling. While public place recycling recovers a small quantity of recyclables, its value is in the enhanced visibility of recycling.

## Litter Changes

In 2007, the Mayor and City Council requested that SPU and Seattle Parks and Recreation (Parks) jointly develop and submit a plan to guide recycling efforts within City of Seattle parks. A systemwide assessment revealed outdoor open spaces offered the fewest opportunities for patrons to recycle in Seattle parks. As a result, SPU and Parks ran a pilot project in 2008 in selected outdoor open spaces to assess program and cost effectiveness. The project collected co-mingled beverage containers, including aluminum, plastic and glass, in designated south region parks.

The pilot project, which collected 19.1 tons of recyclable material, was costly. In general, an outdoor open-space recycling program compares unfavorably with other possible recycling programs. The pilot's price per recycled ton proved high compared to other possible programs. In addition to being more cost-effective, other potential programs could yield more recycling and greater environmental benefits. The pilot project resulted in designing a more cost-effective citywide outdoor open-space recycling program that:

- Integrates collection of recyclables into regular duties of staff who are already conducting work activities in parks
- Locates cans in higher volume locations, including ball fields, park entries or kiosks, boat ramps, and picnic shelters
- Offers the program on a seasonal basis only (stores cans during non-peak seasons)

## Community Cleanup

The fourth program area, Community Cleanup, includes a group of programs that provide resources to help community members clean up litter, illegal dumping, and graffiti themselves:

- **Spring Clean** — an annual program (typically April through May) that supports community-developed projects within the public right-of-way and on other city-owned parcels. SPU provides supplies, including trash bags, safety vests and gloves, and trash disposal for the collection projects. Program staff track and report the total number of projects, number of volunteer hours dedicated to cleanup, and estimated number of pounds of materials collected.
- **Home Cleanup** — aims to reduce illegal dumping by providing a coupon to qualifying households for one annual free-of-charge disposal of up to 500 pounds of garbage at the City of Seattle's transfer stations. Program staff report numbers of coupons sent to customers and numbers redeemed and pounds of material disposed of by program participants.

- **Senior Assist** — provides seniors with one annual free-of-charge service for disposal of up to 500 pounds of garbage. Program metrics include tracking and reporting number of seniors served.

## Community Cleanup Progress on Recommendations

The key action in response to the 2004 Plan's recommendations for this program was revising the coupons. Coupons now allow free transfer station drop-off to increase accountability and coordination among stakeholders. Better controls also reduce risk of unintended revenue loss at the transfer stations.

## Community Cleanup Changes

There have not been significant changes to the Community Cleanup programs in addition to those planned in the 2004 Amendment.

### 5.3.4 Alternatives and Recommendations

The following section describes near- and longer-term changes to Clean City programs.

#### Anti-Graffiti

Building on the 2008 Customer Service Improvement project, a follow-on task force focused on graffiti on private property in 2009 to 2010. SPU asked the group to:

- Review current anti-graffiti code, enforcement protocol and support (outreach and technical assistance) related to private property
- Develop recommendations for improvement

Select recommendations include enhancements to encourage reporting, translation of outreach materials, and development of strategic partnerships to leverage resources. The recommendations were further developed and implemented in 2010.

The Seattle Office of the City Auditor (OCA) conducted a performance audit of the City of Seattle's anti-graffiti efforts. The audit compared the city's efforts to best practices and made recommendations for potential improvements. Implementation of several audit recommendations that affect SPU's anti-graffiti services include:

- Amend the Seattle Municipal Code (SMC 12.A.08.020) to include stickers in the list of prohibited materials
- Redeploy abatement resources across city departments to better address graffiti abatement on multi-space parking pay stations
- Enhance community involvement and public education activities by developing a comprehensive community outreach and engagement plan and convening an anti-graffiti outreach coalition

To better determine customer satisfaction with SPU anti-graffiti program services, a customer satisfaction tool will be developed and launched.

## Illegal Dumping

A 2009 study included several alternatives for improving the illegal dumping program. Recommendations include further development of enforcement protocol, additional staff training, and expanded use of the existing database.

## Litter

King County Metro Transit policy requires them to provide their bus shelter structures with litter can service as well as a host of other scheduled maintenance services, such as sidewalk power washing. However, the City of Seattle is spearheading a center-city bus zone conversion, which converts bus shelter zones to canopy bus zones when private property is redeveloped. These canopies are an integrated element into a new or redeveloped building's streetside façade, so that a traditional bus shelter is not needed.

Currently no formal rules lay out roles and responsibilities for these new canopy zones. Once a canopy zone is built and Metro stops maintenance, these activities shift to the property owner/manager, the City of Seattle, or the Metropolitan Improvement District. Formalized roles, responsibilities and design standards for the bus zone transition projects need to be developed to ensure adequate litter services are provided.

Longer-term program changes may include:

- **Graffiti** — Increased emphasis on prevention, apprehension and prosecution and interdepartmental/inter-agency collaboration
- **Illegal Dumping** — Increased emphasis on enforcement

### 5.3.5 Monitoring and Performance Measurement

Program staff track the performance of all Clean City programs by specified metrics and customer service levels. They report monthly and/or quarterly to SPU and other City of Seattle leaders. Specific programs are evaluated to find efficiencies and to ensure effective and equitable service delivery.

## 5.4 MODERATE RISK WASTE

Moderate risk waste (MRW) is hazardous waste generated by residents and in small quantities by businesses and institutions. Revisions to Washington State's 1986 Hazardous Waste Management Act (RCW 70.105) defined MRW. MRW includes two categories of waste:

1. **Household hazardous waste** (HHW), which is generated by residents, and
2. **Conditionally exempt small quantity generator waste** (CESQG), which is generated in small quantities by businesses, schools, and other institutions. This term refers to both the waste and generator of that waste.

These wastes include many common materials—cleaning, yard care and automotive products—that contain toxic, flammable, reactive, or corrosive ingredients. Seattle Municipal Code (SMC 21.36.026) prohibits disposing HHW and CESQG waste in garbage. Disposed of improperly, these products can pose a threat to human health and the environment.

The Local Hazardous Waste Management Program in King County (LHWMP) manages HHW and CESQG materials in Seattle. The LHWMP is a regional intergovernmental program jointly managed by the City of Seattle, King County, Public Health - Seattle & King County, and the county's suburban cities. LHWMP's mission is to protect and enhance public health and environmental quality in King County by reducing the threat posed by the production, use, storage, and disposal of hazardous materials.

### **5.4.1 Recommendations from 1998 Plan and 2004 Amendments**

All cities and counties in Washington are required to develop plans to manage HHW and CESQG waste (RCW 70.105). In the 1980s, the City of Seattle and other local governments within King County recognized the need to address MRW in a comprehensive, regionally-coordinated manner. Seattle codified its support of a regional MRW management approach in 1991 with the adoption of the LHWMP's decision-making process and fee structure as outlined in the LHWMP's 1990 Plan (SMC 10.76.010).

Since 1991, the City of Seattle has participated in LHWMP's policy and decision-making bodies and has provided services for the program.

### **5.4.2 Planning Issues**

The Local Hazardous Waste Management Plan for King County (1990) provides detailed plans for managing MRW. Updates to this plan were completed in 1997 and 2010. Major issues for the LHWMP include:

- Increased population, changes in the distribution of the population, and changes in the diversity of the population
- Increased awareness that segments of the population, including infants, young children, and pregnant women, are disproportionately vulnerable to toxic exposures
- Increased awareness that segments of the population, such as homebound, multi-family dwellers, and minority cultural communities, are underserved
- Sharp increases in the number, type and complexity of hazardous materials, chemicals and products
- Need to reduce the toxicity of products in their design and manufacturing stages
- Recognition that education and voluntary efforts alone will not achieve safe use, storage, and disposal of hazardous chemicals, products, and wastes

### **5.4.3 Current Programs and Practice**

The LHWMP provides a wide range of work, concentrated in three areas:

1. Reducing threats posed by the production of products
2. Reducing threats posed by the use and storage of hazardous chemicals, products and materials
3. Providing proper collection and disposal of hazardous materials

The partners in the LHWMP provide services and programs, which are available to all King County residents and CESQGs. Specifically, the City of Seattle provides the following LHWMP programs.

- **MRW Collection and Disposal** — SPU operates and maintains two fixed MRW collection facilities that accept waste generated by residents and CESQGs. In addition, SPU staff provide home collection services for the elderly and homebound. Used motor oil and filters are also collected at SPU transfer stations. Some products with a low potential for environmental harm and low toxicity, such as motor oil, car wax, or furniture polish, are available to the public at the site where they are collected.
- **Pesticide Use Reduction** — SPU staff serve as regional experts for natural yard care and pesticide reduction programs. Integrated pest management (IPM) is promoted with private landscape businesses, including non-English speaking gardeners and landscapers, and commercial nurseries. SPU staff and contractors train horticulture students and neighborhood communities. [The Garden Hotline](#) provides specialized information to residents and businesses.
- **Environmental Justice Network in Action (EJNA)** — SPU recognizes the need to address historically underserved populations. Our staff works directly with community-based organizations to communicate and deliver services to minority cultural groups or English-as-second-language populations.
- **Product Stewardship** — SPU works with other local, state, and regional governments and agencies, businesses, and non-profit groups to implement product stewardship programs to manage hazardous materials. Current efforts include development and support of statewide legislation for mercury-containing lamps and tubes and paint.

Other partner agencies implement an array of additional programs and services that are available to Seattle residents and CESQGs. These programs include technical assistance to businesses, hazardous materials exposure reduction for children, and the EnviroStars business recognition program.

## 5.4.4 Alternatives and Recommendations

To address changes that have occurred within King County, the LHWMP has committed to:

- Monitor and assess SPU-operated MRW collection services to provide the maximum number of service hours possible
- Collect materials from CESQGs on an on-going basis
- Expand outreach for hazardous materials collection services, and provision of targeted outreach to the elderly, homebound, non-English speaking population, and historically underserved communities
- Work to secure state product stewardship legislation for unwanted medicines, mercury containing lighting and paint

### 5.4.5 Monitoring and Performance Measurement

LHWMP staff has developed a project monitoring and performance measurement framework to facilitate evaluation and assess effectiveness. For additional information, see Chapter 10 Performance Measurement and Evaluation in the [2010 update](#) to the Local Hazardous Waste Management Program in King County.

The LHWMP website provides additional information on all aspects of the program. Or contact the Office of the Program Administrator, Local Hazardous Waste Management Program in King County, 150 Nickerson Street, Suite 100, Seattle, WA 98109-1658.

## 5.5 SPECIAL WASTES

This section is about wastes not allowed in the regular municipal solid waste (MSW) system, but not hazardous enough to qualify as “Dangerous” under state or federal law. Federal, state, and local regulations ban dangerous wastes from garbage. These wastes are generally toxic, hazardous, and industrial. The Washington State Department of Ecology regulates dangerous wastes and should be contacted for guidance.

Special wastes require special handling and disposal due to regulatory requirements or other reasons such as toxicity, volumes, or particular handling issues. In some cases, special wastes can be landfilled if properly managed.

### 5.5.1 Recommendations from 1998 Plan and 2004 Amendment

The 1998 Plan and 2004 Amendment described standard practices for certain special wastes: tires, asbestos, biosolids, biomedical waste, dangerous waste, and contaminated soils. Neither document contained new policy or programmatic recommendations for special wastes.

### 5.5.2 Planning Issues

Special wastes do not presently cause problems in the City of Seattle's MSW system. Seattle's most recent waste sorts have found minimal presence of special wastes. Waste and recycling receiving facilities have not expressed increasing issues with special wastes.

### 5.5.3 Current Programs and Practices

This current plan update may be used as a starting reference for the community for questions about special wastes. In some cases, these wastes are accepted in Seattle's system. For all else, SPU maintains awareness and up-to-date information for referring citizens to the proper authority.

Table 5-7 lists some special wastes of historical and current interest, with some guidance on their handling. The agency that regulates the waste should be contacted for direction on its proper handling. See the [SPU website](#) for more information on what to do with special and hazardous materials. See also King County's [“What Do I Do With..?” web pages](#).

**Chapter 5**  
Other Seattle Solid Waste Programs

**Table 5-7**  
**Special Waste Programs in Seattle**

| Material                                                                    | Comments/Contacts                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tires</b>                                                                | Banned from garbage<br>If separated, up to four per trip allowed at City of Seattle transfer stations for a fee<br>Also collected privately<br>Mostly shredded for industrial fuel<br>For other disposal options, see King Co. <a href="#">“What do I do with..?” website</a>                                                                                                                                                |
| <b>Appliances (including old refrigerators, freezers, air conditioners)</b> | Banned from garbage<br>Recycling ensures any problem materials in them are properly managed (for example, CFCs in coolant and PCBs in capacitors)<br>Contact SPU for Bulky Item Pick Up for a fee, or up to two accepted at City of Seattle transfer stations for a fee<br>For other disposal options, see <a href="#">SPU’s special materials web pages</a> or King County’s <a href="#">“What do I do with..?” website</a> |
| <b>Asbestos</b>                                                             | Not accepted at SPU transfer stations or at MRW facilities<br>For removal and disposal options, see <a href="#">SPU’s special materials web pages</a> or visit <a href="#">Puget Sound Clean Air Agency</a> or call (206) 343-8800                                                                                                                                                                                           |
| <b>Biosolids (treated sewage sludge)</b>                                    | Seattle’s sewage goes to King Co. wastewater treatment plants<br>Managed by King Co.                                                                                                                                                                                                                                                                                                                                         |
| <b>Biomedical wastes</b>                                                    | For options on disposing sharps (syringes), see <a href="#">SPU’s special materials web pages</a><br>Accepted from residents at SPU’s transfer stations if properly prepared<br>Do not dispose of leftover medicines in garbage or down drain or toilet. Some pharmacies have a medicine take-back program<br>For other biomedical waste banned from garbage, call Public Health - Seattle King County at 206-205-4394       |
| <b>Contaminated Soils</b>                                                   | Large quantities can be accepted at City of Seattle transfer stations for a fee, if accompanied by a Waste Clearance form from Public Health - Seattle & King County. Call 206-263-8528<br>See <a href="#">SPU’s special materials web pages</a> for other disposal options                                                                                                                                                  |
| <b>Electronics (TVs, computers, other consumer electronics)</b>             | Banned from garbage<br>SPU provides Seattle residential service for a fee (206-684-3000) <a href="#">Statewide free TV and computer drop-off</a> or call 1-800-RECYCLE for locations<br>For cell phones, stereos, VCRs, printers, computer mice and keyboards, ask where purchased. Check <a href="#">Take It Back Network</a>                                                                                               |
| <b>Batteries</b>                                                            | Alkaline, rechargeable, button, vehicle: Accepted at household hazardous waste facilities<br>Alkaline: Accepted in garbage<br>Rechargeable: Banned from garbage. Ask where purchased or check for recycling locations at <a href="#">Call2Recycle</a> or 1-800-BATTERY<br>Vehicle: Banned from garbage. Accepted for recycling at city transfer stations for free                                                            |
| <b>Fluorescent bulbs and tubes</b>                                          | Contain mercury<br>Banned from garbage<br>Check where purchased or <a href="#">Take It Back Network</a><br>For broken bulbs, follow <a href="#">Ecology precautions</a>                                                                                                                                                                                                                                                      |
| <b>Used Motor Oil</b>                                                       | Curbside collection for recycling available to residential customers free<br>Uncontaminated in sealed 1-gal containers, up to 2-gal<br>Up to 5 gal and oil filters per trip accepted at City of Seattle transfer stations                                                                                                                                                                                                    |
| <b>Latex Paint, Latex Stain</b>                                             | Accepted in garbage if solidified                                                                                                                                                                                                                                                                                                                                                                                            |

## Screening for Special Wastes

The City of Seattle's transfer stations workers screen for prohibited wastes entering the facilities. Signage at the scale houses and throughout the stations informs users of the prohibited wastes. Workers visually observe all loads and deny access to vehicles carrying prohibited wastes. If prohibited material does get in, employees remove it from the tipping areas (if they can do so safely) or otherwise make sure the material is appropriately managed.

The Columbia Ridge Landfill, in Arlington, Oregon to which Seattle sends its garbage, prohibits certain wastes, including:

- Discarded or abandoned vehicles
- Hazardous wastes
- Lead-acid batteries
- Liquid wastes
- Large metal appliances
- Source-separated recyclable materials except if contaminated
- Used oil
- Whole tires

The City of Seattle's transfer stations collect many of these waste types, such as used oil, lead-acid batteries, whole tires, and large metal appliances for recycling.

Landfill staff are trained in material identification and proper procedures in the event they find banned materials.

### 5.5.4 Alternatives and Recommendations

SPU will continue to maintain up-to-date referral information for special wastes. We will also continue programs to create better end-of-life solutions for problem materials, as Washington State has done for fluorescent lighting and consumer electronics. See Chapter 3, Waste Prevention, for a discussion of those programs.

### 5.5.5 Monitoring and Performance Measurement

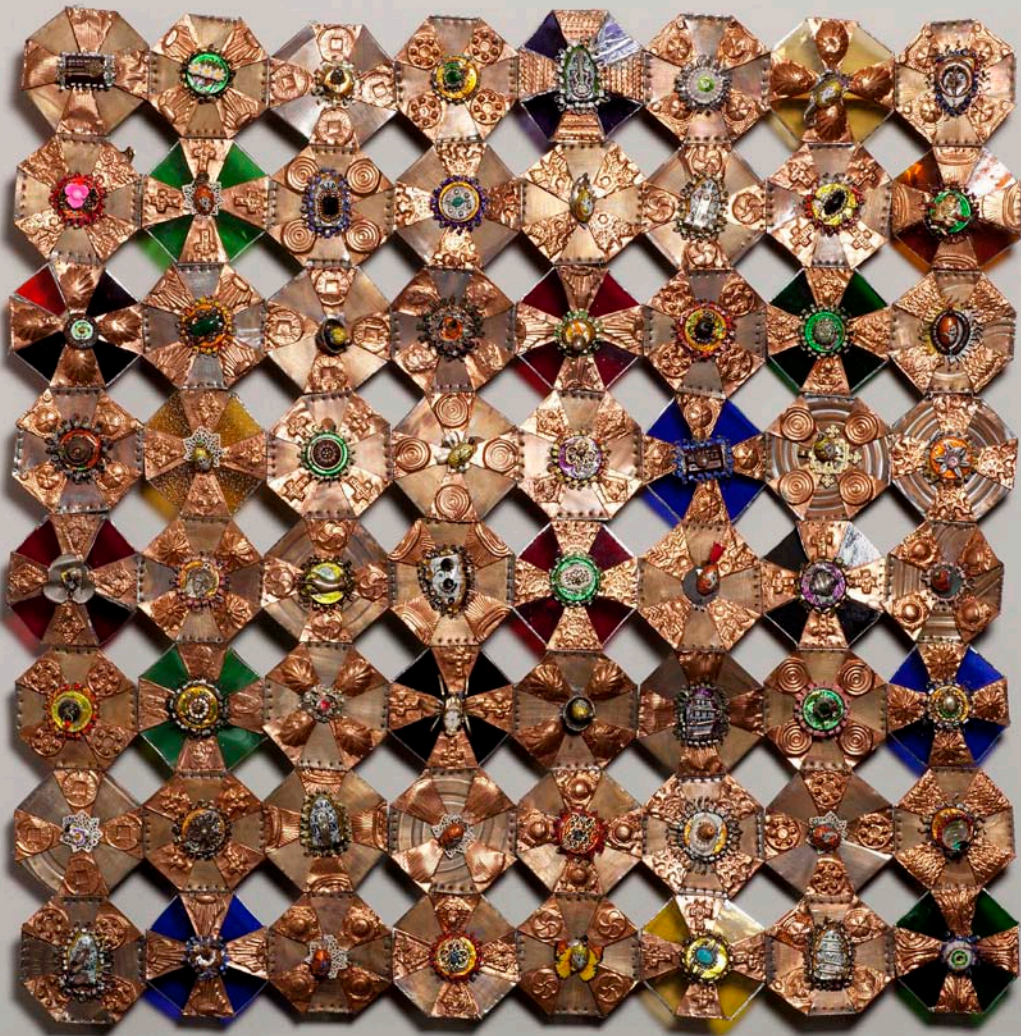
SPU will continue to screen for prohibited wastes at the transfer stations, as will staff at the Oregon landfill. If it appears more prohibited wastes are entering the system, we will evaluate the problem and take appropriate action. The first course of action would be to increase public awareness through education programs.



Administration and  
Financing the Plan



6



**Ross Palmer Beecher**

*Candy Cobweb Quilt, 2003*

Wire-stitched metal, paint wood,  
costume jewelry and found objects  
35 x 35.5 x 3 inches

# Contents

## Chapter 6 Administration and Financing the Plan ..... 3

|            |                                                                   |           |
|------------|-------------------------------------------------------------------|-----------|
| <b>6.1</b> | <b>Organization and Mission of Seattle Public Utilities</b> ..... | <b>3</b>  |
| 6.1.1      | Organization Structure .....                                      | 4         |
| 6.1.2      | Decision-Making in SPU .....                                      | 5         |
| <b>6.2</b> | <b>Education</b> .....                                            | <b>5</b>  |
| 6.2.1      | Customer Service Infrastructure.....                              | 6         |
| 6.2.2      | Commercial Education.....                                         | 7         |
| 6.2.3      | Residential Education.....                                        | 7         |
| 6.2.4      | Community Outreach.....                                           | 8         |
| 6.2.5      | Putting Practice into Play.....                                   | 8         |
| <b>6.3</b> | <b>Financing the Plan</b> .....                                   | <b>10</b> |
| 6.3.1      | Financial Management.....                                         | 10        |
| 6.3.2      | Funding Sources.....                                              | 12        |
| 6.3.3      | Projected Monetary Needs and Financing Strategy .....             | 17        |

### List of Figures

|            |                                                                      |    |
|------------|----------------------------------------------------------------------|----|
| Figure 6-1 | SPU Organization .....                                               | 4  |
| Figure 6-2 | Seattle Solid Waste Revenue Sources 2010 .....                       | 13 |
| Figure 6-3 | SPU Single-Family Monthly Solid Waste Bills 1994 -2011 .....         | 14 |
| Figure 6-4 | SPU Capital Spending and Debt Financing 2001– 2010 .....             | 16 |
| Figure 6-5 | SPU Projected Capital Financing (in \$1000s) .....                   | 19 |
| Figure 6-6 | Projected SPU Solid Waste O&M Spending.....                          | 22 |
| Figure 6-7 | Status Quo and Preferred Scenarios .....                             | 22 |
| Figure 6-8 | Average Rates for Status Quo and Preferred Scenarios* .....          | 23 |
| Figure 6-9 | Status Quo and Preferred Scenarios Revenue and Rate Projections..... | 24 |

### List of Tables

|           |                                                                            |    |
|-----------|----------------------------------------------------------------------------|----|
| Table 6-1 | SPU Financial Results 2006-2010 (in millions of dollars) .....             | 12 |
| Table 6-2 | SPU Monthly Residential Can Rates 2011 .....                               | 14 |
| Table 6-3 | SPU Monthly Residential Dumpster Rates 2011 .....                          | 14 |
| Table 6-4 | SPU Food and Yard Waste Collection Rates 2011 .....                        | 15 |
| Table 6-5 | SPU Commercial Rates 2011 .....                                            | 15 |
| Table 6-6 | SPU Self-Haul Rates 2011 .....                                             | 16 |
| Table 6-7 | SPU Solid Waste Capital Improvement Plan for 2011 – 2016 (in \$1000s)..... | 17 |
| Table 6-8 | SPU Solid Waste Capital Facilities Plan through 2030 (in \$1000s) .....    | 18 |

Table 6-9 SPU Adopted Solid Waste Operations & Maintenance Budget by Branch and by  
Function 2011 ..... 20

## Chapter 6 ADMINISTRATION AND FINANCING THE PLAN

### 6.1 ORGANIZATION AND MISSION OF SEATTLE PUBLIC UTILITIES

Seattle Public Utilities (SPU) is a department in the City of Seattle. It is composed of three major direct-service providing utilities:

- **Water Utility** provides more than 1.3 million people with a reliable supply of clean and safe water for drinking and other uses.
- **Drainage and Wastewater Utility** collects and conveys the city's sewage and stormwater.
- **Solid Waste Utility** functions are described throughout this Plan

#### **SPU Mission**

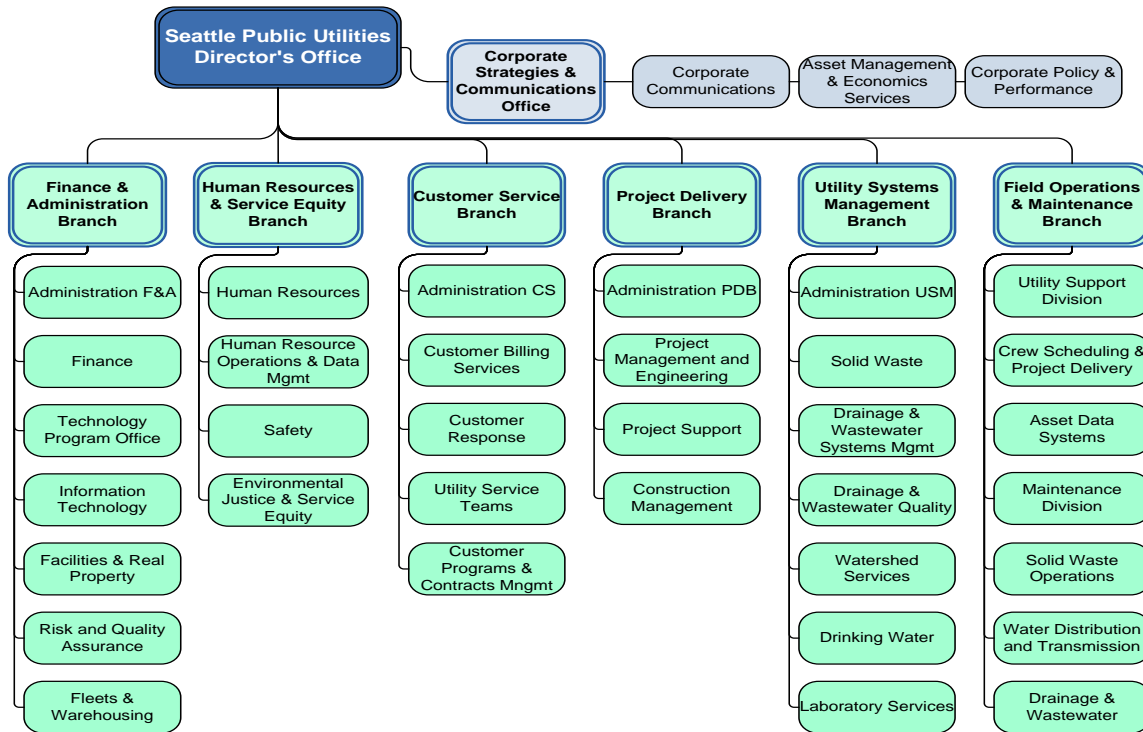
*We provide reliable, efficient and environmentally conscious utility services to enhance the quality of life and livability in all communities we serve.*



## 6.1.1 ORGANIZATION STRUCTURE

SPU consists of seven branches. Each branch and the Director's office have a role in carrying out solid waste management functions (Figure 6-1).

**Figure 6-1**  
**SPU Organization**



### Director's Office

The Director of SPU leads the organization following policies set by the Mayor and the Seattle City Council. The Corporate Strategies and Communications Office assists the Director in designing and carrying out policy, strategy, analyses, community relations, and internal and external communications. The office focuses on issues, initiatives, and agreements involving all SPU's lines of business, other departments and governments, and the public.

### Finance and Administration Branch

The Finance and Administration Branch houses the financial functions of SPU, including, accounting, budget, and rates. This branch also takes care of information technology, real property, risk management, and fleets and warehousing for all of SPU.

### Human Resources and Service Equity Branch

In addition to carrying out SPU's human resource functions, this branch also includes the department's Environmental Justice and Service Equity division (EJSE). EJSE makes sure that SPU's projects, programs, and services do not disproportionately affect human health and economies in communities of color, low-incomes, immigrants, and refugees. EJSE also ensures

that SPU programs, projects, and services are done in ways that fairly spread benefits across all communities.

## Customer Service Branch

The Customer Service Branch is responsible for most of SPU's regular customer contact. Specifically, for solid waste this branch does the following:

- **Customer Billing Services** manages all SPU's bills to customers.
- **Customer Response** includes the call center, where customers call with questions and requests about their service.
- **Utility Service Teams** is the division that includes the solid waste inspection team.
- **Customer Programs and Contracts Management** is responsible for carrying out many of SPU's programs, such as materials market development, and implementing programs.

## Project Delivery Branch

The Project Delivery Branch carries out approved capital projects. The branch provides SPU's engineering design and support services, construction inspection, and project management services.

## Utility Systems Management Branch

This branch is the main planning arm of SPU. Within it, the Solid Waste division ensures that the solid waste system and its assets are properly planned, developed, operated, and maintained. The Solid Waste division further ensures that asset management principles and practices are applied to achieve customer and environmental service levels at the lowest life-cycle cost.

## Field Operations and Maintenance Branch

Solid waste field operations and maintenance are located in this branch. It includes the day-to-day functions of the transfer stations, the historic landfills, and the household hazardous waste facilities.

### 6.1.2 DECISION-MAKING IN SPU

In 2002, SPU began implementing a comprehensive asset management program. Asset management aims to ensure that a "triple bottom line" is fully considered when SPU makes decisions about its programs and assets. The triple bottom line includes financial, environmental, and social impacts.

Asset management in SPU has focused mainly on capital (infrastructure) assets and projects. As success grows with the asset management approach, we will apply it to more non-capital (programmatic) decisions.

## 6.2 EDUCATION

SPU places high priority on customer education in recycling and waste reduction. We provide solid waste services for more than 390,000 multi-family units, single-family households and

businesses, who generate more than one million tons of MSW and C&D waste each year. Educating our customers about the impacts of their behavior and highlighting the programs available to them has helped develop the city's identity as one of the greenest in the nation.

## 6.2.1 CUSTOMER SERVICE INFRASTRUCTURE

Many of Seattle's solid waste education efforts are built into SPU's customer service and overall communications. Overall communication provides utility information to all drainage, wastewater, water, and solid waste customers.

### Call Center

In terms of sheer numbers, the chief means by which SPU interacts with its customers is through its 206-684-3000 phone number. Customers can get information about all SPU's programs and services, and access their own billing and service information.

Call center staff receive regular training on solid waste programs to help them provide quality customer assistance.

### Newsletters & Calendars

SPU's most effective customer education tool is regular newsletters:

**CurbWaste & Conserve** — CurbWaste & Conserve is a 6-page newsletter published two to four times a year and sent to all 320,000 single- and multi-family residents who receive SPU services. The newsletter highlights SPU's environmental programs and offers tips to residents on how they can help the environment. A monthly email version of the newsletter is also available.

**@ Your Service** — @ Your Service is a 2-page newsletter that is inserted with the SPU's 160,000 bi-monthly residential customer bills. The newsletter mainly focuses on service and billing changes.

**Collection Calendars** — SPU's single-family, multi-family, and small business recycling customers receive annual collection calendars that outline their collection and billing services. It gives tips on how to reduce and reuse, including pointers on what materials can be put in the recycling and composting.

### The Web

SPU's website is the main information portal to all SPU programs and services. In 2010, the website generated 2,677,635 visits and 10,762,688 page views. The solid waste collection calendar is one of the most often accessed pages on the website.

In addition to summary descriptions of Seattle's solid waste services, the SPU website hosts planning documents, reports, informational brochures, and instructional videos and video games to help educate businesses and residents. The website also hosts a blog, Facebook, MySpace and Twitter pages for social networking.

### Inspectors

SPU has a team of inspectors whose key role is to ensure that solid waste collection goes smoothly for all of Seattle's commercial and residential customers. In addition to following up



on customer complaints and troubleshooting collection issues, the inspection team also works with the city's collection contractors to enforce customer compliance with Seattle's solid waste regulations.

## Transfer Stations

The city's two recycling and disposal transfer stations offer education to their commercial and residential customers, mainly through talking to customers in person. The transfer stations also use their customer billing system, a low-power radio broadcast at each station, and brochures and signs on site to inform customers.

### 6.2.2 COMMERCIAL EDUCATION

Commercial customers receive billing and service information through their private collection service contractors. SPU staff, collection contractors, and non-profit agencies also develop and promote new programs.

#### Resource Venture

Most [commercial solid waste education programs for Seattle](#) are channeled through Resource Venture. Resource Venture is a contracted consulting service that specializes in providing free waste reduction, recycling, and composting audits to Seattle-area businesses.

Additional commercial education partners include Waste Management, CleanScapes, Cedar Grove, and many community-based organizations (SeaDruNar and Allied Waste), who are vital in helping SPU reach populations that speak languages other than English.

#### Key Accounts

SPU offers additional customer support to its largest 100 commercial customers through a key billing accounts team. Key accounts team members work to inform large commercial customers about upcoming impacts to their billing or services. They also help educate large commercial customers about the utility's environmental programs that are available to them.

### 6.2.3 RESIDENTIAL EDUCATION

#### Single-Family

With several programs that promote recycling and composting to its single-family customers, SPU relies on market research to develop messages that connect with and motivate its customers. We conduct several customer surveys a year. Feedback from customers has helped define which tactics are most effective when promoting solid waste programs. Direct mail and television news stories and advertising rank highest in terms of effective message delivery to single-family customers.

#### Multi-Family

SPU's multi-family education strategy hinges on empowering these property owners and managers so that they act as educators to their tenants.

SPU provides apartment and condo managers with an educational tool kit that allows them to order educational information in multiple languages for their tenants. The program also offers a one-time \$100 credit on their utility bill if they sign up for a Friend of Recycling and Composting (FORC) stewardships. FORC stewards are a tenant or manager who, once trained, acts as an onsite solid waste educator to the building's tenants.

## **6.2.4 COMMUNITY OUTREACH**

Engaging and partnering with public organizations is a key strategy in promoting SPU's solid waste programs. We partner with other city departments, school districts, local government, state and non-profit agencies to better serve our customers. Our customers include children, immigrants, and populations that speak languages other than English.

SPU also invites input from the public through its Solid Waste Advisory Committee, which provides opinion and analysis on solid waste issues, programs and services.

## **6.2.5 PUTTING PRACTICE INTO PLAY**

In 2009, SPU improved its curbside residential recycling services to include more materials and to make recycling more convenient. Changes included the following:

- New collection dates
- No more sorting of glass
- Ability to recycle more items
- Weekly food and yard waste collection
- Increased food scrap recycling to include meat and fish

In addition, SPU established food and yard waste collection as a mandatory service for single-family homes, meaning that many people would be recycling food for the very first time.

The new solid waste services resulted in monthly rate increases for many customers. The new changes required Seattle residents to rethink the way that they handled their garbage, recycling, and yard waste. SPU expected that some customers would resist the changes, and especially the rate increase. All Seattle customers, particularly minority and underserved populations, needed equitable levels of service and attention.

Forming an interdisciplinary outreach team, SPU developed and implemented a communications plan to raise customer awareness and support for the service changes. The resulting "Better Recycling Starts March 30" Outreach Campaign was extremely successful. The campaign was highly visible and exceeded behavior change and awareness objectives set before program launch. Outreach tactics consisted of customer research, focus groups, mailers, community meetings, speakers bureau presentations, advertising, and media relations.

SPU addressed the challenge of providing information to English as Second Language (ESL) communities and other minority populations through a comprehensive media relations campaign targeted at minority radio, TV, and print publications. The campaign put special focus on food composting, because research showed food composting was hard for these groups to embrace.

**Objective #1: Customers reflect an understanding of new service changes and are aware of their new collection day.**

**Result:** To analyze the success of the outreach campaign, SPU surveyed Seattle residents by phone in May 2009. Of those surveyed, 82.6% were aware of the changes in garbage and recycling services. And 72.9% knew how to use the new services. Some 79% reported knowing their new collection day. A mini-survey conducted before service launch during the marketing campaign found that 94% surveyed recalled hearing messaging about the new recycling services.

**Objective #2: Increase visits to the SPU website by at least 50% during March 2009 to provide residents detailed information about service changes and their new collection date.**

**Result:** SPU reported 120,232 page views for its website in March 2009, an increase of 116% from March 2008. SPU's "Where Does it Go" recycling flyer received 33,000 page views in March and April, the highest-viewed SPU webpage during the same period.

**Objective #3: SPU maintains satisfaction levels among residents during the service launch in March 2009.**

**Result:** Campaign research indicated that not only was satisfaction with SPU maintained during the service change and rate increase, but customers were also more satisfied with SPU services after the change. Some 62.4% reported being satisfied with SPU services after the changes were introduced, up from 57.4% before changes.

**Objective #4: Increase amount of food waste recycled by at least 25% in the first 4 months following the March 30 service launch.**

**Result:** Curbside food recycling among Seattle residents increased 43% from March 2009 through August 2009. It peaked in April, May and June, the months following the campaign launch.

The Washington State Recycling Association recognized the City of Seattle with a Recycler of the Year Award for the Better Recycling Starts March 30 Campaign. The campaign also received a Silver Award of Excellence from the Solid Waste Association of North America.

## 6.3 FINANCING THE PLAN

This section describes Seattle’s framework for managing solid waste system finances. It discusses methods of financing the solid waste system. It also projects the costs of operating the solid waste system and meeting City of Seattle waste reduction and recycling objectives.

### 6.3.1 FINANCIAL MANAGEMENT

#### Financial Policies

Financial management of Seattle’s solid waste system is directed by two forces. One is through formal financial policies the City Council adopts. The other is by informal guidelines evolved over time in response to specific issues. SPU uses these policies and guidelines to decide how to finance solid waste system operations and capital projects. The goals of these policies are:

- To ensure the financial integrity of the solid waste utility
- To moderate rate increases for solid waste customers over the near and medium term
- To ensure an equitable allocation of capital costs between current and future ratepayers

The City Council adopted these financial policies in 2004:

1. **Net Income** — Net income should be generally positive.
2. **Cash Target** — Target for year-end operating fund cash balance is 20 days of contract payments for collection and disposal services.
3. **Cash Funding of the Capital Improvement Program** — A minimum of \$2.5 million (in constant 2003 dollars) of the annual CIP should be funded with cash. SPU has adopted an informal policy of funding the greater of \$2.5 million (in 2003 dollars) or 10% of the CIP in years of higher spending.
4. **Debt Service Coverage** — Debt service coverage on first-lien debt should be at least 1.7 times debt service cost in each year.
5. **Maintenance of Capital Assets** — For the benefit of both current and future ratepayers, the solid waste system will seek to maintain its capital assets in sound working condition.
6. **Variable Rate Debt** — Variable rate debt should not exceed 15% of total outstanding debt.
7. **Debt Structure** — As a general practice, the solid waste system will have level nominal debt service and will not defer the repayment of principal.

Financial policies help determine how much revenue SPU must collect from its customers each year to meet the cost of operations, maintenance and repair, and capital improvements. Accordingly, rates are generally set to meet the financial policies as well as to meet projected systemwide solid waste needs. Rate impacts stemming from specific courses of action recommended in this plan cannot be determined without first considering financial policies.

## Financial Results

Financially healthy organizations have the flexibility to respond to unexpected circumstances. Such circumstances may include new, unexpected-but-essential tasks or a shortfall in earnings. Flexibility can mean redirecting expenditures, borrowing money to meet an unexpected need, or other approaches.

*Debt service coverage* is a key indicator used by the financial community that provides a measure of SPU's financial health. Debt service coverage is an annual measure of the revenue an organization has available to repay debt, divided by debt payments. SPU's debt-service coverage policy target is 1.70. SPU has well surpassed this target in the past, and we expect to meet the target in the period covered by this Plan.

Credit ratings also reflect the financial health of an organization. They are an informed assessment of the long-term security of bond investments. Rating agencies take account of a variety of factors including:

- Financial policies
- Strength of the local economy
- Legal security
- Risk factors
- Comparative rate levels
- Management capability and performance
- Willingness of elected officials to raise rates

The City of Seattle solid waste system has excellent bond ratings.<sup>1</sup>

SPU has made a major commitment to using the [asset management approach](#) described in section 6.1.2 in its capital planning and budgeting. By adopting an asset management approach, SPU is better able to ensure cost effectiveness in service delivery in the long run. This cost effectiveness is reflected in SPU's financial results over the past 5 years (Table 6-1). With the exception of 2009 when the 2007 – 2012 Global Recession caused significant revenue losses, SPU has consistently met its financial targets.

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<sup>1</sup>AA by Standard and Poor's and Aa3 by Moody's

**Table 6-1**  
**SPU Financial Results 2006-2010 (in millions of dollars)**

| Revenues and Expenditures        | 2006    | 2007    | 2008    | 2009    | 2010    |
|----------------------------------|---------|---------|---------|---------|---------|
| <b>Revenues</b>                  |         |         |         |         |         |
| Operating Revenues               | 112,474 | 121,930 | 124,343 | 135,641 | 150,906 |
| Total Revenues                   | 112,474 | 121,930 | 124,343 | 135,641 | 150,906 |
| <b>Expenses</b>                  |         |         |         |         |         |
| Operations and Maintenance (O&M) | 88,035  | 91,207  | 91,169  | 116,812 | 120,904 |
| Taxes                            | 17,018  | 18,934  | 18,883  | 19,477  | 16,643  |
| Interest Expense                 | 1,531   | 1,471   | 3,051   | 2,613   | 2,512   |
| Depreciation and Amortization    | 7,217   | 7,093   | 8,188   | 7,789   | 6,916   |
| Total Expenses                   | 113,081 | 118,704 | 121,291 | 146,691 | 146,975 |
| <b>Other Income (Expense)</b>    | 115     | 196     | 3,589   | 2,490   | 2,055   |
| <b>Net Income</b>                | (1,212) | 3,421   | 6,641   | (8,560) | 5,986   |
| <b>Financial Indicators</b>      |         |         |         |         |         |
| Debt Service Coverage            | 4.21    | 5.28    | 4.36    | 1.80    | 5.05    |
| Target                           | 1.70    | 1.70    | 1.70    | 1.70    | 1.70    |
| Cash Balance                     | 5,621   | 10,058  | 14,122  | 3,889   | 10,271  |
| Target                           | 3,500   | 3,500   | 3,500   | 4,200   | 4,800   |
| Cash Funding of the CIP          | 2,600   | 3,300   | 3,600   | 2,700   | 6,600   |
| Target                           | 2,700   | 2,800   | 2,900   | 2,950   | 3,000   |

## 6.3.2 FUNDING SOURCES

Solid waste services are funded through the Solid Waste Fund, an enterprise fund established in 1961 by city ordinance. The primary source of funding for SPU's solid waste operational costs are revenues derived from commercial and residential solid waste collection and disposal. To finance capital spending, SPU relies primarily on borrowing and to a lesser extent on rate revenues. The solid waste system is in a period of large capital improvements, with projects under way to upgrade both of Seattle's recycling and disposal stations. Accordingly, SPU will rely heavily on borrowing over the next few years.

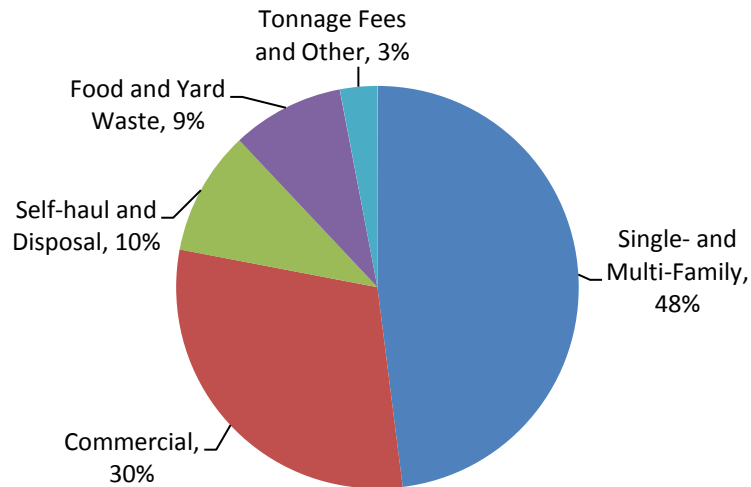
### Solid Waste Revenue

There are four primary sources of operating revenue that fund Seattle's solid waste programs. These programs cost \$151 million to finance in 2010 (Figure 6-2):

- Residential collection rates charged to single-and multi-family accounts
- Commercial collection rates charged to business accounts
- Self-haul tipping fees charged to self-haul customers at the city's recycling and disposal stations
- Solid waste tonnage fees charged to all entities, including SPU, that are engaged in, or carrying on, the business of collecting and transferring non-recyclable solid waste

The fund also receives other miscellaneous revenues, including grants.

**Figure 6-2**  
**Seattle Solid Waste Revenue Sources 2010**



## Solid Waste Rates

Solid waste rates are developed by SPU and proposed by the Mayor for the City Council's approval. Rates are developed based on the following objectives:

- Provide financial soundness
- Advance economic efficiency
- Promote customer equity
- Encourage customer conservation
- Contribute to transparency and customer understanding
- Reduce impacts on low-income customers

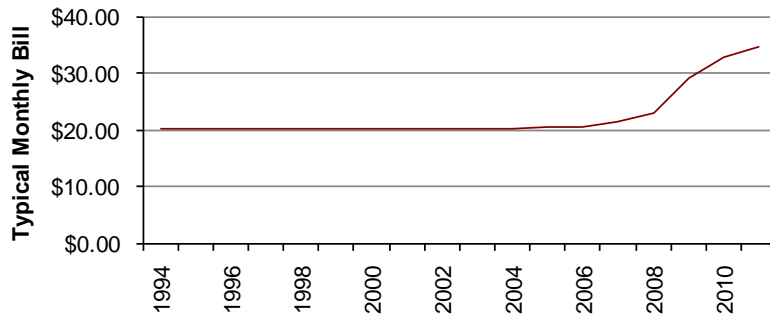
Affordability is also an issue considered during rate setting. In 2007 to 2008, SPU conducted an analysis that recommended ways to measure and improve rate affordability. SPU has already adopted the recommended changes to our low-income rate assistance program. See this chapter's discussion of [low-income rate assistance](#).

Rates are set by customer class. All rates reflect a pay-as-you-throw structure in which rates increase as service levels increase. These variable rates are designed to encourage waste reduction and recycling.

The largest component of solid waste costs is operations and maintenance expense, including collection, processing and disposal contract costs, and transfer station operations costs. From 1994 until 2007, rate increases were relatively minor as those costs stayed relatively flat. However, since 2007 a series of rate increases have helped pay for significant cost increases in new contracts that started in 2009. Rate increases have also helped finance significant capital investments in transfer stations. The typical single-family monthly bill includes a 32-gallon garbage can, a 96-gallon food and yard waste can, and a 96-gallon recycling cart (Figure 6-3).

The typical single-family monthly bill did not rise from about \$20 per month for more than 10 years. The typical single-family monthly bill is now about \$35.

**Figure 6-3**  
**SPU Single-Family Monthly Solid Waste Bills 1994 -2011**



## Residential Rates

All Seattle residents are required to subscribe to garbage collection service. However, customers may choose the level of service they need. Residential customers receive every-other-week recycling service at no charge.

### Can Customers

Most single-family and multiplex customers (“can customers”) have curb or alley service. For an additional fee, can customers can elect back-yard-collection (Table 6-2).

**Table 6-2**  
**SPU Monthly Residential Can Rates 2011**

| Service Level                       | Monthly Rate |
|-------------------------------------|--------------|
| Micro Can                           | \$16.55      |
| Mini Can                            | \$20.30      |
| 32-Gallon Can (and each additional) | \$26.40      |
| Extra Bundle/Bag                    | Each \$8.10  |

### Dumpster Customers

Residential dumpster service is available to apartment buildings with five or more residential units. Rates are set per container pick-up and vary with container size. Table 6-3 shows typical residential dumpster service levels and their monthly rates.

**Table 6-3**  
**SPU Monthly Residential Dumpster Rates 2011**

| Service Level per Container  | Monthly Rate |
|------------------------------|--------------|
| Weekly Pick-Up (Uncompacted) |              |
| 1 Yard                       | \$195.34     |
| 2 Yards                      | \$267.87     |
| 3 Yards                      | \$340.39     |



## Food and Yard Waste Service

Residential customers also have curbside food and yard waste collection (Table 6-4). Before 2009, the service was voluntary with a flat monthly fee. In 2009, the service became mandatory for can customers, and two additional can sizes were added. Residential dumpster customers may also elect to subscribe to this service.

**Table 6-4**  
**SPU Food and Yard Waste Collection Rates 2011**

| Service Level | Monthly Rate |
|---------------|--------------|
| Mini Can      | \$4.35       |
| 32 Gallon Can | \$6.50       |
| 96 Gallon Can | \$8.35       |
| Extra Bundle  | \$4.15       |

## Other Services

SPU also provides a special collection service for bulky items such as furniture and refrigerators. The rate is \$30 per item, with an additional \$8 charge for items containing chlorofluorocarbons (CFCs)—like refrigerators. SPU also offers curbside electronics recycling pickup with a \$20 charge for each pickup of up to three items.

## Low-Income Assistance

The city offers rate assistance to qualified low-income customers. Qualified low-income customers receive a 50% discount on their solid waste bill. Customers who live in apartment buildings and do not receive a SPU bill directly receive a fixed credit on their Seattle City Light bill.

## Commercial Rates

Seattle has set commercial garbage rates since April 2001, when the City of Seattle entered into contracts with private haulers. At that time, Seattle rolled back some commercial rates to their 1994 levels. Unlike residential customers, businesses can choose to sign up for garbage collection service or self-haul their wastes to the recycling and disposal stations. Table 6-5 shows 2011 rates for some typical commercial service levels.

**Table 6-5**  
**SPU Commercial Rates 2011**

| Service Level per Container<br>Weekly Pick-Up (Uncompacted) | Monthly Rate |
|-------------------------------------------------------------|--------------|
| 1 Yard                                                      | \$178.41     |
| 2 Yards                                                     | \$277.57     |
| 3 Yards                                                     | \$376.73     |

## Self-Haul Rates

Rates at the recycling and disposal stations vary depending on the kind or type of material (Table 6-6). To help move customers through the stations efficiently, vehicles that typically have small loads (sedans, station wagons, and SUVs) pay a flat rate. All other vehicles are weighed on their way in and out of the stations and charged based on the weight of their load.

**Table 6-6**  
**SPU Self-Haul Rates 2011**

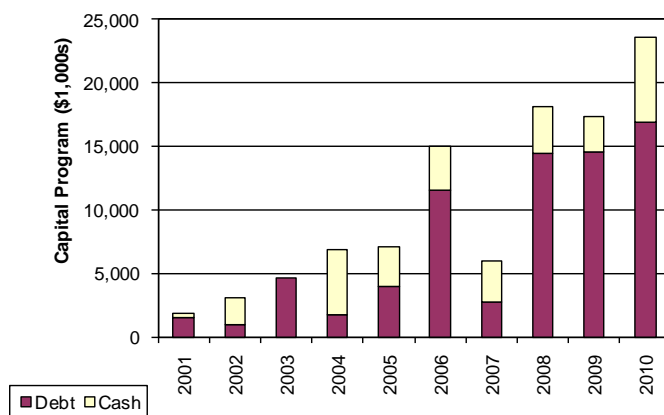
| Type of Waste | Flat Rate | Per-Ton   |
|---------------|-----------|-----------|
| Garbage       | \$30.00   | \$145.00  |
| Yard Waste    | \$20.00   | \$110.00  |
| Appliances    | \$30.00   | N/A       |
| Recyclables   | No Charge | No Charge |

## Debt Financing

SPU finances its capital program primarily with debt from the issuance of revenue bonds. A minimum of the greater of \$2.5 million<sup>2</sup> or 10% of the capital program is financed with rate revenues or cash.

Before 2008, the solid waste fund’s capital program was relatively small. SPU issued bonds in 1999 to fund landfill closure and miscellaneous transfer station improvements, but a large portion of the capital program was financed with rate revenues. From 2003 to 2007, SPU drew on a line of credit to fund land purchases and other capital investments. In 2007 and 2011, bonds were issued to begin funding the transfer station rebuilding project. Figure 6-4 shows capital spending and debt financing from 2001 through 2010. Future capital spending and debt financing are discussed in the next section.

**Figure 6-4**  
**SPU Capital Spending and Debt Financing 2001– 2010**



<sup>2</sup> In \$2003

### 6.3.3 PROJECTED MONETARY NEEDS AND FINANCING STRATEGY

This section highlights the costs of operating SPU’s solid waste system and meeting its waste reduction and recycling objectives. First, we discuss the 6-year capital improvement plan and longer-term capital facilities and O&M plan. We then outline likely methods of financing those activities and compare the status quo with SPU’s recommended package of programs and policies.

#### Capital Improvement Program Plan

In 2010, the City Council adopted a Capital Improvement Program (CIP) plan for 2011 to 2016. The CIP is broken down into four major programs as shown in Table 6-7.

**Table 6-7**  
**SPU Solid Waste Capital Improvement Plan for 2011 – 2016 (in \$1000s)**

| Program                            | 2011   | 2012   | 2013   | 2014   | 2015   | 2016  | Total   |
|------------------------------------|--------|--------|--------|--------|--------|-------|---------|
| New Facilities                     | 25,710 | 35,411 | 32,368 | 36,725 | 21,464 | 3,975 | 155,653 |
| Rehabilitation and Heavy Equipment | 262    | 271    | 58     | 49     | 50     | 51    | 741     |
| Shared Cost Projects               | 1,860  | 2,295  | 2,098  | 2,088  | 2,150  | 2,318 | 12,809  |
| Technology                         | 1,415  | 2,138  | 4,808  | 5,512  | 2,916  | 2,302 | 19,091  |
| Total                              | 29,247 | 40,115 | 39,332 | 44,374 | 26,580 | 8,646 | 188,294 |

#### New Facilities Program

The New Facilities program includes projects that plan, design, and construct new facilities to enhance solid waste operations. In 2011, SPU continues the implementation of its Solid Waste Facilities Master Plan, which features a two-station configuration. Major projects include rebuilds of the south and north transfer stations, as well as the South Park Development project.

**South Transfer Station Rebuild Project.** This project replaces the existing solid waste transfer station built in 1966. The design and construction of replacement facilities include several items. Among these are demolition of existing structures, excavation and removal of contaminated soil, and backfill with clean soil. Others are clean-up of the bus yard and re-alignment of a subsurface storm drain pipe to the perimeter of the site. The final items are construction of new recycling and reuse facilities, a household hazardous waste facility, and other utility facilities.

**North Transfer Station Rebuild.** This project rebuilds the existing North Recycling and Disposal Station built in 1967. The design and construction of the new facility includes demolition of the existing transfer station and a warehouse building. New construction includes an administrative building and employee, recycling and other utility facilities. The two transfer station rebuild projects provide essential structures for solid waste management in Seattle and enhance our recycling capability. They also provide citizens with sufficient recycling and solid waste services.

**South Park Development Project.** This project complies with a Washington State Department of Ecology Agreed Order to conduct a Remedial Investigation and Feasibility Study of the historic South Park Landfill site and covers investigation and eventual remediation of the landfill site to protect human health and the environment. SPU owns a portion of the site on which the landfill once operated, and was an historic operator of the landfill. Final cost allocation among potentially liable parties will occur at a later stage.

### Rehabilitation and Heavy Equipment Program

The Rehabilitation and Heavy Equipment program designs and constructs projects to repair and upgrade solid waste facilities.

### Shared Cost Projects Program

The Shared Cost Projects program includes capital costs that typically benefit multiple lines of business (for example, the Water and the Drainage and Wastewater lines of business). The costs are "shared," or paid for, by more than one of SPU's utility funds.

### Technology Program

The Technology program makes use of recent technology advances to increase efficiency and productivity. It replaces vital systems not supported past 2011. The program includes a planned upgrade to the Consolidated Customer Service System and new technology solutions for enhanced customer contact management.

## Long-Term Capital Facilities Budget

In addition to the 6-year CIP, SPU has developed its best estimate of a capital facilities budget through 2030, given what is known and anticipated at this time (Table 6-8). The long-term capital budget is expected to be the same for the status quo and the recommended package of programs.

**Table 6-8**  
**SPU Solid Waste Capital Facilities Plan through 2030 (in \$1000s)**

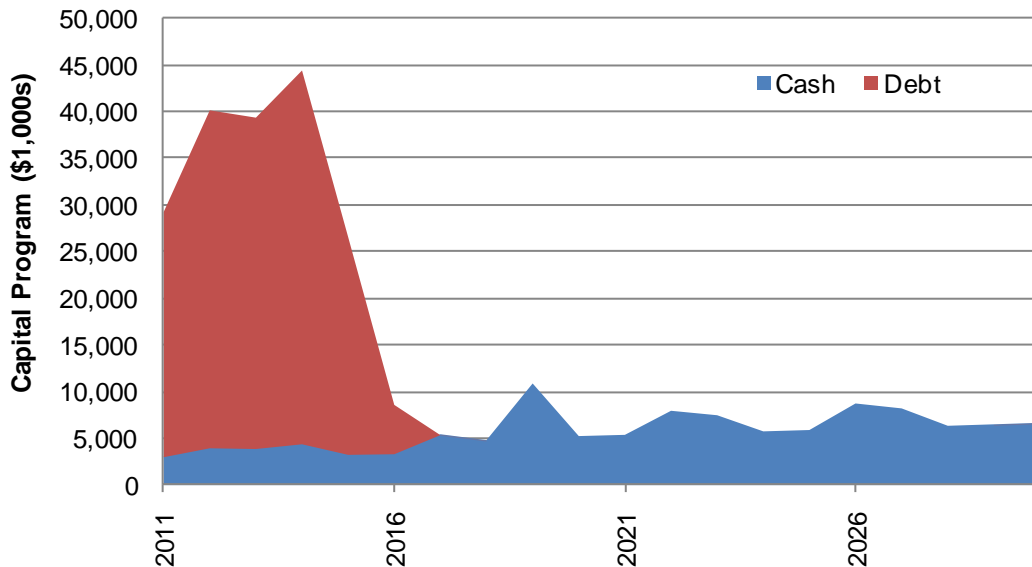
| Business Area                      | 2017-2020 | 2021-2025 | 2026-2030 |
|------------------------------------|-----------|-----------|-----------|
| New Facilities                     | 492       | 5,252     | 5,825     |
| Rehabilitation and Heavy Equipment | 5,749     | 118       |           |
| Shared Cost Projects               | 8,206     | 11,439    | 12,942    |
| Technology                         | 11,798    | 15,476    | 17,509    |
| Total                              | 26,246    | 32,285    | 36,276    |

Once the north and south transfer station replacement projects are complete, the solid waste CIP is expected to drop to about \$5 million annually. This amount includes regular equipment replacement, intermittent station improvements and ongoing shared and technology projects.

## Projected Capital Financing

SPU plans to finance most of the CIP with debt during the period of significant capital spending associated with rebuilding the transfer stations (Figure 6-5). After that time, we expect to finance all of the SPU solid waste CIP with cash.

**Figure 6-5**  
**SPU Projected Capital Financing (in \$1,000s)**



## O&M Outlook

The solid waste fund's 2011 adopted O&M budget by branch and functional area is in Table 6-9. Contracted collection processing, and disposal costs made up about 60% of solid waste system costs. Other significant costs included city and state taxes (11%) and transfer station operations (5%).

Under the status quo, solid waste system O&M expenses<sup>3</sup> through 2030 are expected to grow mainly due to inflation. Contract terms include escalators based on inflation indices. SPU labor costs will follow cost of living trends. The proportion of costs in each branch and function is expected to remain about the same.

Projected O&M costs are lower under the recommended package of programs than under the status quo. Variable collection, processing, and disposal costs for each recycled ton are generally lower for recycled tons than for disposed tons. Since the recommended package has more recycled tons than the status quo, variable costs are lower. Also, while SPU recycling program

<sup>3</sup> Operations and Maintenance (O&M) not including debt service or taxes

**Table 6-9  
SPU Adopted Solid Waste Operations & Maintenance Budget by Branch and by Function 2011**

| Major Cost Centers                                                                    | SPU Branch       |                  |                      |                 |                     |                   |                               | Accounting Organization         |                        |                 | Total        |
|---------------------------------------------------------------------------------------|------------------|------------------|----------------------|-----------------|---------------------|-------------------|-------------------------------|---------------------------------|------------------------|-----------------|--------------|
|                                                                                       | Customer Service | Field Operations | Utility Systems Mgmt | Finance & Admin | HR & Service Equity | Director's Office | Project Delivery <sup>1</sup> | Pre-Capital Planning & Develop. | General & Admin Credit | General Expense |              |
| Collect, Process, Disposal Contracts                                                  |                  |                  |                      |                 |                     |                   |                               |                                 |                        | \$93,216,952    | \$93,216,952 |
| LHWMP <sup>2</sup> payment                                                            |                  |                  |                      |                 |                     |                   |                               |                                 |                        | \$2,874,072     | \$2,874,072  |
| Phones and billing                                                                    | \$3,684,157      |                  |                      |                 |                     |                   |                               |                                 |                        |                 | \$3,684,157  |
| Recycling & waste reduction programs, inspections                                     | \$3,188,747      |                  |                      |                 |                     |                   |                               |                                 |                        |                 | \$3,188,747  |
| Transfer station ops                                                                  |                  | \$8,275,51       |                      |                 |                     |                   |                               |                                 |                        |                 | \$8,275,515  |
| Landfill Maintenance                                                                  |                  | \$ 86,172        |                      |                 |                     |                   |                               |                                 |                        |                 | \$ 986,172   |
| Solid Waste Planning & Contract Management                                            |                  |                  | 2,333,937            |                 |                     |                   |                               |                                 |                        |                 | \$ 2,333,937 |
| Rates, budget, accounting, contracts, IT, fleets, facilities                          |                  |                  |                      | \$3,129,260     |                     |                   |                               |                                 |                        |                 | \$3,129,260  |
| Personnel, safety, service equity                                                     |                  |                  |                      |                 | \$1,601,295         |                   |                               |                                 |                        |                 | \$1,601,295  |
| Economists, communications, community relations, legislative liaison, dept leadership |                  |                  |                      |                 |                     | \$1,740,916       |                               |                                 |                        |                 | \$1,740,916  |
| Non-project general <sup>2</sup>                                                      | \$2,036,692      | \$808,344        | \$412,423            |                 |                     |                   | \$463,425                     | \$463,700                       |                        | \$77,025        | \$4,261,609  |
| Allocated city costs                                                                  |                  |                  |                      |                 |                     |                   |                               |                                 |                        | \$4,310,328     | \$4,310,328  |
| Taxes                                                                                 |                  |                  |                      |                 |                     |                   |                               |                                 |                        | \$18,123,440    | \$18,123,440 |

| SPU Branch                                     |                      |                     |                      |                    |                     |                    |                               | Accounting Organization         |                        |                      |                      |
|------------------------------------------------|----------------------|---------------------|----------------------|--------------------|---------------------|--------------------|-------------------------------|---------------------------------|------------------------|----------------------|----------------------|
| Major Cost Centers                             | Customer Service     | Field Operations    | Utility Systems Mgmt | Finance & Admin    | HR & Service Equity | Director's Office  | Project Delivery <sup>1</sup> | Pre-Capital Planning & Develop. | General & Admin Credit | General Expense      | Total                |
| Debt Service                                   |                      |                     |                      |                    |                     |                    |                               |                                 |                        | \$7,338,581          | \$7,338,581          |
| G&A Credit                                     |                      |                     |                      |                    |                     |                    |                               |                                 | \$(1,531,563)          |                      | \$(1,531,563)        |
| <b>Solid Waste Tax funded via General Fund</b> |                      |                     |                      |                    |                     |                    |                               |                                 |                        |                      |                      |
| Clean City Programs                            | \$3,668,419          |                     | \$92,273             |                    |                     |                    |                               |                                 |                        |                      | \$3,760,692          |
| <b>Reimbursements = Expenditures</b>           |                      |                     |                      |                    |                     |                    |                               |                                 |                        |                      |                      |
| LHWMP <sup>3</sup>                             | \$ 293,083           | \$1,640,985         | \$331,541            |                    | \$223,498           |                    |                               |                                 |                        |                      | \$ 2,489,107         |
| <b>Total</b>                                   | <b>\$ 12,871,098</b> | <b>\$11,711,016</b> | <b>\$3,170,174</b>   | <b>\$3,129,260</b> | <b>\$1,824,793</b>  | <b>\$1,740,916</b> | <b>\$ 463,425</b>             | <b>\$463,700</b>                | <b>\$(1,531,563)</b>   | <b>\$125,940,398</b> | <b>\$159,783,217</b> |

<sup>1</sup>Capital Project planning moves out of the O&M budget to the CIP budget after projects are approved.

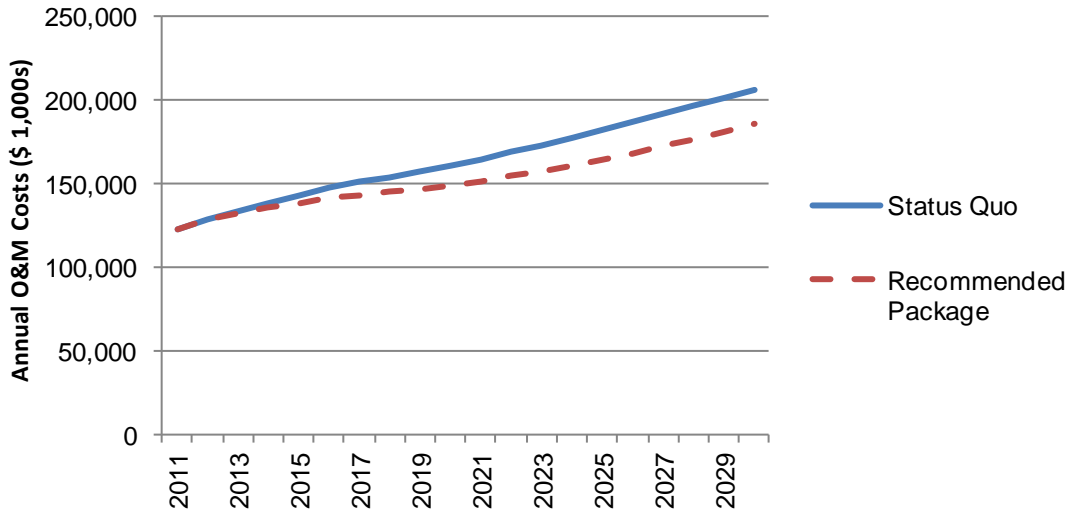
<sup>2</sup>Solid waste general functions and the solid waste fund share of the department-wide overhead

<sup>3</sup> LHWMP = Local Hazardous Waste Management Program

implementation costs are higher in the recommended package, the increase is more than offset by the savings on the variable contract costs.

Figure 6-6 compares O&M projections for the status quo and recommended package.

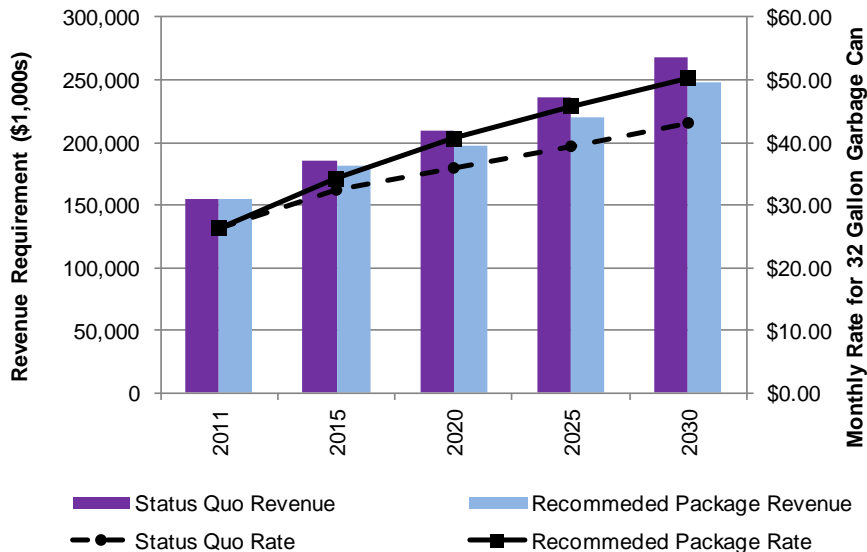
**Figure 6-6**  
**Projected SPU Solid Waste O&M Spending**



## Revenue and Rate Projections

Rate increases are required under the status quo and recommended scenarios to meet the [financial policies](#) discussed in section 6.3.1 (Figure 6-7). Revenues are higher under the status quo than under the recommended scenario. They rise from about \$150 million in 2011 to about \$260 million by 2030. Costs are lower under the recommended scenario (see [O&M Outlook](#) section) than under the status quo, resulting in a lower revenue requirement.

**Figure 6-7**  
**Status Quo and Preferred Scenarios**



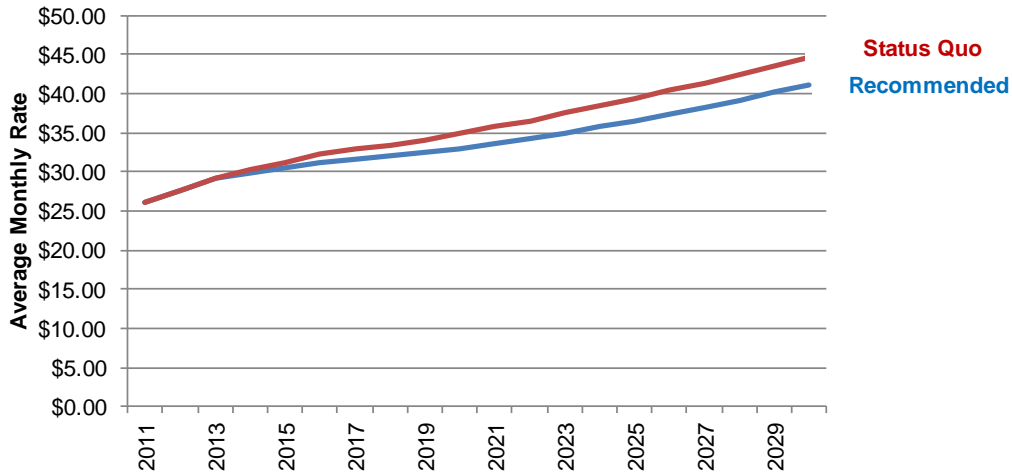


Rates will need to go up more in the recommended package than in the status quo scenario. This difference comes from the impact of waste reduction and recycling on customer subscription levels. As customers decrease their garbage, they need less service and reduce their container size, number of containers, or pick-up frequency. In turn, this reduces the number of service units from which SPU can collect rates. Therefore, the rate per unit rises.

On the other hand, SPU offers many subscription level options. Many customers who reduce their volume of garbage will also decrease their garbage can size. Therefore, those customers' actual bills will not go up by as much as Figure 6-7 suggests. It shows the increase for the same subscription level (can size) over time.

The garbage rate for the average customer reflects changes in customer can sizes. The average rate for the recommended scenario actually increases more slowly than for the status quo (Figure 6-8). The reason for the slower increase is that customers tend to switch to a smaller can size as they reduce waste and recycle more.

**Figure 6-8**  
**Average Rates for Status Quo and Preferred Scenarios\***

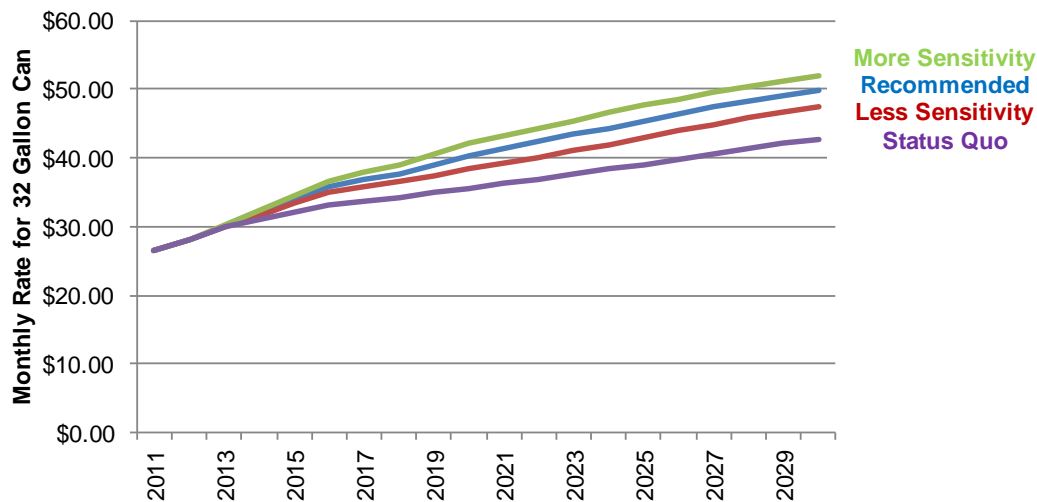


\*Assumptions are based on historical customer demand patterns

## Alternative Rate Projections

Rates will be sensitive to actual customer demand (Figure 6-9). If customers decrease their subscription levels less than projected, then rates will not increase as much as Figure 6-8 suggests. Alternatively, if customers decrease their subscription levels more than projected, then rates will increase more than projected.

**Figure 6-9**  
**Status Quo and Preferred Scenarios Revenue and Rate Projections**



## Other Rate Drivers

Other rate drivers are operational efficiencies, recovery fees, and product stewardship.

### Operational Efficiencies

SPU has made strides in identifying operating efficiencies and reducing costs to cope with the impact of the recent recession. In the future, additional operating efficiencies can help offset rate increases. For example, SPU's new transfer stations will have more capacity and therefore reduce reliance on private transfer stations. In addition, we can reallocate existing staff resources to some of the new recycling and waste reduction programs.

### Recovery Fees

Consumer or producer recovery fees, paid when a product is produced or sold, could be a source of funding for solid waste. These fees would help pay for some solid waste system costs, thereby reducing the amount that needs to be recovered from ratepayers. See Chapter 3 Waste Prevention, section 3.2.4, for details on how consumer or producer fees could be used to recover costs associated with disposing or recycling certain products and their packaging.

## **Cost Internalization and Other Product Stewardship Initiatives**

SPU's costs will be lowered and rate increases mitigated by programs that encourage consumers to choose products with fewer environmental effects or that remove materials from the solid waste stream (producer take-back initiatives).

## **Conclusion**

Rates will rise whether SPU stays with the status quo or proceeds with this Plan's recommendations. Under the status quo, rates will rise to cover inflation and any new capital investments.

The recommended programs reduce garbage tons moving through the system. The new programs also have implementation costs. However, cost savings from less garbage more than offset new program costs, thus reducing the overall revenue requirement. The effect on rates is that they need to increase more than under the status quo. Rates will need to rise to make up for revenue losses as customers reduce their service levels (lost subscription units) in response to new programs.



Glossary



**Marita Dingus**

*Fence with Rubber, Yellow and Green  
Plastic and Spools, 2011*

Black rubber strips, yellow and green  
plastic objects, wood beads, buttons,  
thread spools, plastic dental trays  
25 x 23 x 2 inches

## Appendix A: Glossary

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|                                                              |                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Anaerobic digestion</b>                                   | The process by which organic material is broken down by micro-organisms in the absence of oxygen. This process results in emission of a CO <sub>2</sub> - and methane rich biogas that can be collected and used as an energy source. The digestate can then be landfilled or composted.                                                      |
| <b>Beyond Waste</b>                                          | The ultimate message behind the State of Washington Solid Waste Management Plan. Beyond Waste focuses on achieving a state where waste is viewed as inefficient and toxic substances have been eliminated.                                                                                                                                    |
| <b>Biosolids</b>                                             | Municipal sewage sludge that is a primarily organic, semisolid product resulting from the wastewater treatment process and can be beneficially recycled.                                                                                                                                                                                      |
| <b>Built Green®</b>                                          | A market-driven green building program usually administered by local homebuilders association chapters. The focus of this program is to promote and certify green construction in the residential sector.                                                                                                                                     |
| <b>Byproduct synergy</b>                                     | The principle underlying by-product synergy is that one industry's waste can be another's primary resource.                                                                                                                                                                                                                                   |
| <b>Commercial solid waste</b>                                | All types of solid waste generated by stores, offices, restaurants, warehouses and other non-manufacturing activities, excluding residential and industrial wastes.                                                                                                                                                                           |
| <b>Commingled recycling</b>                                  | A method of recovery and/or collection where recyclable commodities are mixed together and sorted at a material recovery facility (MRF).                                                                                                                                                                                                      |
| <b>Compact fluorescent lamps (CFLs)</b>                      | A type of fluorescent lamp typically designed to replace an incandescent lamp. Like all fluorescent lamps, CFLs contain mercury, which complicates their disposal.                                                                                                                                                                            |
| <b>Composting</b>                                            | The biological degradation and transformation of organic solid waste under controlled conditions designed to promote aerobic decomposition.                                                                                                                                                                                                   |
| <b>Conditionally exempt small quantity generator (CESQG)</b> | A dangerous waste generator whose dangerous wastes are not subject to regulation under Chapter 70.105 RCW, Hazardous Waste Management, solely because the waste is generated or accumulated in quantities below the threshold for regulation and meets the conditions prescribed in WAC 173-303-070 (8)(b).                                   |
| <b>Construction and demolition debris (C&amp;D)</b>          | The waste material that results from construction, demolition and land clearing, largely comprised of inert and organic material. Consists of, but is not limited to the following materials: wood waste, concrete, asphalt, gypsum wallboard, glass and scrap metal. Also known as construction, demolition and land-clearing debris or CDL. |
| <b>Contamination</b>                                         | Garbage in recyclable materials.                                                                                                                                                                                                                                                                                                              |

## Appendix A: Glossary

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|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Dangerous waste</b>                 | Discarded, useless, unwanted or abandoned substances, including but not limited to certain pesticides, or any residues or containers of such substances which are disposed of in such quantity or concentration as to pose a substantial present or potential hazard to human health, wildlife or the environment because such wastes or constituents or combinations of such wastes: a) have short-lives, toxic properties that may cause death, injury or illness or have mutagenic, teratogenic or carcinogenic properties, or: b) are corrosive, explosive, flammable or may generate pressure through decomposition or other means. |
| <b>Discards</b>                        | Items or materials cast aside because they are no longer wanted or needed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Designated recyclables</b>          | Wastes separated for recycling or reuse, such as paper, metals and plastics that are identified as recyclable material pursuant to a local comprehensive solid waste plan.                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Diversion</b>                       | Materials that are taken out of the waste stream. Any method of recycling, energy production or beneficial use that prevents disposition of material in landfills or incinerators.                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>E-Cycle Washington</b>              | Washington's producer-funded recycling program for computers, monitors, laptops and televisions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>E-Waste</b>                         | (Electronic Waste): Waste products produced as a result of spent, unusable or unwanted electronics. Examples include computer monitors, televisions, and desktop or laptop computers.                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Environmental justice</b>           | The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Flow control</b>                    | A local or state government having the authority to direct municipal solid waste (MSW) to certain facilities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Green building</b>                  | Reducing the physiological and environmental effects caused by the construction, operation, maintenance and demolition of buildings.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Green purchasing</b>                | The procurement of products or services that cause less harm to human health and the environment when compared with competing products or services that serve the same purpose. Also known as environmentally preferable purchasing (EPP) or responsible purchasing.                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Household hazardous waste (HHW)</b> | Any waste that exhibits the properties of dangerous wastes, but is exempt from dangerous waste regulations solely because households generate it. Those substances identified by the Washington State Department of Ecology as hazardous household substances in the guidelines developed under RCW 70.105.220 (LHWMP Guidelines).                                                                                                                                                                                                                                                                                                       |
| <b>Intermodal facility</b>             | Any facility operated for the purpose of transporting closed containers of waste and the containers are not opened for further treatment, processing or consolidation of the waste.                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Landfill</b>                        | A disposal facility or part of a facility at which solid waste is permanently placed in or on land including facilities that use solid waste as a component of fill.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

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|                                                      |                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>LEED</b>                                          | Leadership in Energy and Environmental Design. A green building rating and certification system developed by the United States Green Building Council.                                                                                                                                                                 |
| <b>Local hazardous waste management plan (LHWMP)</b> | A county's plan to meet the law pursuant to RCW 70.105.220.                                                                                                                                                                                                                                                            |
| <b>Material recovery facility (MRF)</b>              | Any facility that collects, compacts, repackages, sorts or processes for transport source separated solid waste for recycling.                                                                                                                                                                                         |
| <b>Moderate risk waste (MRW)</b>                     | Solid waste that is limited to conditionally exempt small quantity generator (CESQG) waste and household hazardous waste (HHW) as defined in Chapter WAC 173-350.                                                                                                                                                      |
| <b>Municipal solid waste (MSW)</b>                   | A subset of solid waste that includes unsegregated garbage, refuse and similar solid waste material discarded from residential, commercial, institutional and industrial sources and community activities, including residue after recyclables have been separated.                                                    |
| <b>Organics (organic materials)</b>                  | Organic materials that include landscaping and yard waste, food waste, manures, crop residues, wood, soiled/low-grade paper, and biosolids.                                                                                                                                                                            |
| <b>Product stewardship</b>                           | Product stewardship is achieved when those who produce, sell, use, or dispose of a product assume responsibility for the product's environmental, social, and economic costs throughout the product's life cycle.                                                                                                      |
| <b>Recycling</b>                                     | Transforming or remanufacturing waste materials into usable or marketable materials for use other than landfill disposal or incineration.                                                                                                                                                                              |
| <b>Solid waste</b>                                   | All putrescible and nonputrescible solid and semisolid wastes including, but not limited to garbage, rubbish, ashes, industrial wastes, swill, sewage sludge, demolition and construction wastes, abandoned vehicles or parts thereof, contaminated soils and contaminated dredged material, and recyclable materials. |
| <b>Solid Waste Advisory Committee (SWAC)</b>         | An advisory committee established at the local level within each planning jurisdiction and at the state level. Assists in development of programs and policies concerning solid waste handling and disposal and to review and comment on proposed rules, policies, or ordinances prior to their adoption.              |
| <b>Source separation</b>                             | The separation of different kinds of solid waste at the place where the waste originates.                                                                                                                                                                                                                              |
| <b>State Environmental Policy Act (SEPA)</b>         | A way to identify possible environmental impacts that may result from governmental decisions.                                                                                                                                                                                                                          |
| <b>Sustainability</b>                                | Meeting the needs of the present without compromising the ability of future generations to meet their own needs.                                                                                                                                                                                                       |
| <b>Transfer station</b>                              | A permanent, fixed, supplemental collection and transportation facility used by persons and route collection vehicles to deposit collected solid waste from offsite into a larger transfer vehicle for transport to a solid waste handling facility.                                                                   |



## Appendix A: Glossary

|                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Washington Materials Management and Financing Authority (MMFA or WMMFA)</b> | The manufacturer authority created by state law to handle the recycling of certain electronics in the State of Washington.                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Waste characterization</b>                                                  | The composition and ratio of materials in the total waste stream. Also sometimes referred to as a “waste audit.”                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Waste prevention</b>                                                        | The practice of minimizing waste through responsible purchasing and consumerism. Essentially, removing waste from the waste stream by not creating it in the first place. Also sometimes referred to as waste reduction or “preycling.”                                                                                                                                                                                                                                                                 |
| <b>Wood waste</b>                                                              | Solid waste consisting of wood pieces or particles generated as a byproduct of waste from the manufacturing of wood products, construction, demolition, handling and storage of raw materials, trees and stumps. Includes, but not limited to sawdust, chips, shavings, bark, pulp, hogged fuel and log sort yard waste. Does not include wood pieces or particles containing paint, laminates, bonding agents or chemical preservatives such as creosote, pentachlorophenol or copper-chrome-arsenate. |
| <b>Yard waste/debris</b>                                                       | Plant material commonly created in the course of maintaining yards and gardens and through horticulture, gardening, landscaping or similar activities. Includes, but not limited to, grass clippings, leaves, branches, brush, weeds, flowers, roots, windfall fruit and vegetable garden debris.                                                                                                                                                                                                       |

Zero Waste Resolution  
30990





**Evan Blackwell**  
*Untitled Eusapia*, 2010  
Wood window frames  
36 x 38 x 2.5 inches

# Appendix B: Zero Waste Resolution (30990)

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**Resolution Number: 30990**

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A RESOLUTION establishing new recycling goals for the City of Seattle and providing direction on waste-reduction programs and solid waste facilities.

**Status:** Adopted

**Date adopted by Full Council:** July 16, 2007

**Note:** *Zero Waste Strategy*

**Vote:** 9-0

**Date introduced/referred to committee:** June 25, 2007

**Committee:** Environment, Emergency Management and Utilities

**Sponsor:** CONLIN

**Index Terms:** STATING-POLICY, RECYCLING, SOLID-WASTE-DISPOSAL, LANDFILLS, TRANSFER-STATIONS, SOLID-WASTE, WASTE-DISPOSAL

**Fiscal Note:** [Fiscal Note to Resolution 30990](#)

**Electronic Copy:** [PDF scan of Resolution No. 30990](#)

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## Text

*Note to users: {- indicates start of text that has been amended out  
-} indicates end of text that has been amended out  
{+ indicates start of text that has been amended in  
+} indicates end of text that has been amended in*

RESOLUTION \_\_\_\_\_

A RESOLUTION establishing new recycling goals for the City of Seattle and providing direction on waste-reduction programs and solid waste facilities.

WHEREAS, Resolution 27871 adopted the City of Seattle's ("City's") 1988 Integrated Solid Waste Management Plan which established a goal of recycling 60% of the waste produced within the city; and

WHEREAS, the City's 1998 and 2004 Solid Waste Plans, adopted by Resolutions 29805 and 30750, respectively, reaffirmed the 60% recycling goal; and

WHEREAS, the substantial recycling progress to date has been slower than expected causing the timeframe for reaching the 60% recycling goal to be incrementally lengthened from 1998 to 2010; and

## Appendix B: Zero Waste Resolution (30990)

WHEREAS, the City Council and Mayor seek to further reduce disposed waste so that the City can more quickly meet and exceed its 60% recycling goal and build more efficient waste facilities; and

WHEREAS, to address future recycling and waste disposal needs, the City Council and Mayor adopted Resolution 30431 directing Seattle Public Utilities ("SPU") to prepare a Solid Waste Facilities Master Plan ("Master Plan"); and

WHEREAS, the Master Plan, completed in 2004, recommended rebuilding the City's two transfer stations and constructing a new intermodal facility in south Seattle; and

WHEREAS, to further validate the City's waste-reduction and facility approaches, the City Council and Mayor requested that an independent consultant conduct a review of SPU's recycling efforts and facilities proposals. That review resulted in the April 2007 Seattle Solid Waste Recycling, Waste Reduction, and Facilities Opportunities report ("Zero-Waste Report"), which identified new recycling actions and facility efficiencies through which the City might reach 72% recycling by 2025; and

WHEREAS, the City Council and Mayor seek to expand recycling and move forward with facility upgrades by applying zero-waste principles to the City's management of solid waste; NOW, THEREFORE,

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF SEATTLE, THE MAYOR CONCURRING, THAT:

Section 1. Goals. The City establishes the following goals for recycling and waste reduction.

A. The City will recycle 60% of the waste produced within the city by 2012, and 70% of the waste produced within the city by 2025.

B. The City will not dispose of any more total solid waste in future years than went to the landfill in 2006 (438,000 tons of municipal solid waste ("MSW").

C. For the next five years, the City will reduce the amount of solid waste disposed by at least 1% per year (2008-2012).

D. Future waste-reduction goals for the period 2013-2028 (the term of the long-haul disposal contract) will be set based on the experience of the first five years, with the aspiration of achieving a steady reduction in the amount of waste disposed each year.

Section 2. Waste-Reduction Strategies. The action strategies adopted to achieve City goals shall apply zero-waste principles. Zero-waste principles entail managing resources instead of waste; conserving natural resources through waste prevention and recycling; turning discarded resources into jobs and new products instead of trash; promoting products and materials that are durable and recyclable; and discouraging products and materials that can only become trash after their use. Action strategies should include elements that:

A. Actively encourage and support a system where producers minimize waste during product design and take responsibility for the reuse or recycling of used products;

B. Promote the highest and best use of recycled materials;

C. Minimize the environmental impacts of disposed waste; and

D. Implement actions in a sequence that: 1) starts by simultaneously offering any new recycling service for customers to use on a voluntary basis, implementing incentives to encourage participation, and pursuing product stewardship approaches to avoid waste or remove waste from the City waste stream and 2) as a second step consider prohibiting disposal of the targeted materials as garbage in order to ensure full participation of all customers.

Section 3. Waste-Reduction Actions. SPU shall propose specific waste-reduction actions, consistent with the strategies described above, to achieve City recycling goals as part of future rate proposals, budgets, and solid waste plan updates. The proposed rates and budgets for 2008, 2009, and 2010 shall include, at minimum, the actions in Attachment A. Additional actions (similar to those in the Zero-Waste Report) shall be proposed as part of future rates, budgets, and solid waste plans as needed to meet City goals.

Section 4. Facility Actions. To help reach City waste-reduction goals and efficiently manage current and future solid waste, the following actions shall be taken to upgrade City facilities.

A. The South and North Recycling and Disposal Stations ("SRDS" and "NRDS") will be designed to accommodate expanded recycling, a retail re-use facility, and self-haul waste and collection trucks in roughly the same proportions that they now experience, but with design elements for self-haul tonnages to be below current levels. While there may continue to be, on an operational basis, some use of private transfer stations, NRDS and SRDS will be designed to handle the City's MSW.

B. To the extent that the recycling and disposal stations experience decreases in total tonnages of waste disposed, the City will explore the possibility of adding additional waste-reduction and recycling programs, and the stations will be designed to facilitate conversion of space dedicated to disposal to waste reduction and recycling.

C. The City will purchase additional properties for the development of the new SRDS.

Section 5. Reporting. SPU will report to Council by July 1 of each year on the previous year's progress toward recycling goals, as well as further steps to be taken to meet goals in the current and upcoming years. Each annual report shall contain the comments of the Solid Waste Advisory Committee.

Adopted by the City Council the \_\_\_\_ day of \_\_\_\_\_, 2007, and signed by me in open session in authentication of its adoption this

**Appendix B: Zero Waste Resolution (30990)**

\_\_\_\_\_ day of \_\_\_\_\_, 2007.

\_\_\_\_\_  
President \_\_\_\_\_ of the City Council

THE MAYOR CONCURRING:

\_\_\_\_\_  
Gregory J. Nickels, Mayor

Filed by me this \_\_\_\_ day of \_\_\_\_\_, 2007.

\_\_\_\_\_  
City Clerk

(Seal)

Attachment A: Waste-Reduction Actions

Meg Moorehead/mm

LEG Zero\_resoV4a.doc

July 3, 2007

Version #4a

ATTACHMENT A: WASTE-REDUCTION ACTIONS

TO RESOLUTION 30990 ESTABLISHING NEW RECYCLING GOALS FOR THE CITY OF SEATTLE AND PROVIDING DIRECTION ON

WASTE-REDUCTION PROGRAMS AND SOLID WASTE FACILITIES

The following actions shall be implemented to achieve waste-reduction goals. The first years of implementation are shown in parentheses.

ALL WASTE

A. All City agencies will meet or exceed all requirements for waste reduction and recycling placed on commercial and residential customers (2007).

B. The City will institute a \$100,000 annual Waste Reduction/Recycling Matching Fund for community recycling/waste reduction initiatives (2008).

C. SPU will initiate a market development effort for difficult to recycle materials such as asphalt roofing, drywall, and tires (2008).

D. The City's Solid Waste Advisory Committee (SWAC) will be consulted on design and implementation strategies for new programs, and the City shall consult with other appropriate stakeholders as needed to provide input into the analysis of actions for implementation in 2008

or beyond. Additional members may be added to the SWAC or ad hoc advisory groups may be formed to perform more detailed work on specific action strategies if this would be helpful in meeting the increased work load for the SWAC (2008 and beyond).

E. Seattle Public Utilities (SPU) will expand inspection and enforcement actions for the present ban on disposal of recyclables (2009-2011).

F. SPU will mandate that all collection trucks use a ultra-low sulfur diesel/biodiesel mixture or compressed natural gas to reduce both airborne particulates and green house gas emissions (2009).

G. SPU will institute performance-based contracting for collection/disposal companies through 2009 collection contracts based on achieving waste-reduction goals (instead of amount of waste disposed) (2009).

H. SPU will increase opportunities for waste reduction audits and waste reduction/recycling education to commercial customers (2009).

I. SPU will increase opportunities for waste reduction audits and waste reduction/recycling education to residential and multi-family customers. (2009).

J. The City will expand recycling services available at large events and parks (2010).

K. The City will explore ways to cooperate with other governments in Central Puget Sound to coordinate waste reduction, product stewardship, and other efforts across jurisdictions (2008).

#### ORGANICS

A. The City will continue to build a commercial organics program through 2007 and beyond by working with customers and collection companies to provide incentives and design programs to facilitate, promote, and increase the cost-effectiveness of commercial organics collections. Among the incentives to be evaluated will be designing rates to encourage organics recycling, including decreasing the per-unit organics charge as quantities of organics increase (2007).

B. The City will further develop its residential organics program in negotiations and contract discussions in fall 2007 (2007).

C. The City will implement a new organics program on April 1, 2009, including:

\* All single-family customers will have organics collection unless the customer is actively composting food in the yard (an exemption process will be developed).

\* A tiered can rate will be established for organics.

\* All food waste will be included in organics collections.

\* A future ban of all organics from single family garbage will be



## **Appendix B: Zero Waste Resolution (30990)**

considered once the collection system has been fully established (2009).

D. Multi-family organics collection will be expanded to be a voluntary service available to all customers no later than April, 2009. SPU will review and propose incentives and education programs that will encourage participation by property owners and residents (2009).

E. Collection frequencies for garbage, recycling and organics will be determined in fall 2007 as part of negotiations with service providers. The evaluation criteria for different collection alternatives (and costs, benefits and operational impacts associated with collection frequencies) will be determined in time for implementation in the 2009 collection contract. If weekly organics and every other week garbage are not part of the baseline 2009 collection contract, then pilots on these frequencies will be performed in 2010-2011 (2009-2011).

F. SPU will conduct a study by the end of 2010, to be done with an advisory group, to determine the costs, benefits, operational impacts and effectiveness of a potential mandatory multi-family organics collection program which could be implemented by the end of 2011. The scope of work for the study will include a requirement to develop evaluation criteria (2010-2011).

### **SELF HAUL**

A. Both North and South Recycling and Disposal Stations will continue to be available for self-haul customers (2007 and beyond).

B. Newly constructed facilities will be designed to address present overcrowding. However, facility designs will assume a total self-haul disposal tonnage below current levels, due to anticipated diversion programs (2007 and beyond).

C. To help reduce tonnages, starting in 2008, self haul will be priced at full operating cost. As North and South stations are reconstructed, self-haul charges will ramp up to reflect at least partial capital costs as well (2008).

D. SPU will promote contracted and private sector pickup and diversion services to self-haul customers, to increase station efficiency (2008).

E. In 2008, SPU will conduct a study to evaluate potential waste-reduction incentives and disincentives targeted to self-haul customers. This study will include options such as on-demand or periodic curbside pick-up, providing periodic vouchers for private pickup service, and increasing public awareness of private pickup options to minimize self-haul customer traffic at City transfer stations. In 2009, the Executive will work with Council to determine next steps on minimizing self haul including pilot programs where appropriate (2008-2009).

### **CONSTRUCTION AND DEMOLITION (C&D) WASTE**

A. The City will increase reuse/waste reduction/recycling of C&D waste through the modification of the City's current demolition permit by the end of 2008. The permit modifications will emphasize and give priority to steps that would lead to the salvage and reuse of building materials. SPU will work with the Department of Planning and Development (DPD) to develop the permit modifications and to explore incentives and disincentives to developers and contractors to accomplish waste-reduction goals. Permit development will identify the minimum project size (in square feet) for which a demolition permit will be required (2008).

B. By mid-2008, the City will explore incentives such as grants, tax reductions, and development assistance to encourage private companies to develop facilities for sorting and recycling C&D waste (2008).

C. By mid-2008, SPU will analyze potential waste reduction/recycling opportunities available to the City for C&D waste through development of a publicly owned C&D facility and use of the City's flow control authority (2008).

D. The Mayor and Council will make a decision by mid-2008 on whether to issue a potential Request for Proposals (RFP) for either private or public C&D processing plant (s), based on the analyses detailed above (2008).

E. The City will consider providing incentives and requirements for larger development projects to promote recycling of C&D waste and use of recycled materials in construction, and/or adopting a City requirement that a given percent of C&D waste from each construction site be reused or recycled. This could include requiring a recycling plan and fee deposit when issuing building and demolition permits, with a portion of the fee refunded based on the amount of C&D waste recycled (2010).

F. The City will also consider grants, tax reductions, and other incentives to encourage businesses to reuse C&D materials (such as roofing and drywall) or reprocess them into new products (2010).

G. The City will review benefits, costs, operational impacts, and possible implementation time frames in recommending whether to pursue a prohibition on disposal of C&D recyclables as garbage at City stations (2010).

H. The City will review benefits, costs, operational impacts, and possible implementation time frames for increasing tipping fees for disposal of mixed C&D waste while decreasing the fee for transfer station drop-off of source-separated recyclable C&D materials (2010).

**PRODUCT STEWARDSHIP**

A. SPU will increase support for the Northwest Product Stewardship Council (NPSC) (2008).

B. SPU will contract with the NPSC to conduct a study to determine the most effective strategies for local stewardship activities (2008).

## Appendix B: Zero Waste Resolution (30990)

C. The Mayor and Council will identify and consider potential state legislation regarding product stewardship for the 2008 state legislative session (2008).

D. SPU will evaluate the feasibility of implementing producer take-back programs and recommend appropriate action steps for Styrofoam packaging take-back, manufacturer/retailer take-back of used carpet and possible tax incentives or other business development incentives to promote local carpet-recovery markets, producer take-back and reprocessing for paint, and improvements to regional mercury-containing product recycling/take-back for mercury-containing products such as fluorescent light bulbs and thermometers (2008).

E. SPU will actively participate in implementation planning for e-waste producer-funded take-back programs and endeavor to ensure that implementation in Seattle captures the maximum feasible amount of e-waste (2008).

### PRODUCT BANS

By mid-2008 SPU will conduct a comprehensive study of products, packages and ingredients that could be banned or otherwise discouraged through taxes or other means. This study will include:

- \* Identification of potential products, packages and/or ingredients that could be banned or discouraged in the near future.
- \* Legal alternatives for banning, restricting, or discouraging the use of products, packages, and/or ingredients.
- \* Criteria for evaluating such actions, including the actions' costs and benefits, including water quality benefits to the Puget Sound basin.
- \* An evaluation of available substitutes for anything for which actions are proposed.
- \* Recommendations for an implementation/action plan based on a prioritized list (2008).

Initial products for review will include non-compostable plastic shopping bags and Styrofoam food containers, for which SPU will complete its study and recommendations by the earlier deadline of December 2007.

### ACTIONS TO BE INCLUDED IN THE 2008 RATE.

The following actions will be among those incorporated into the 2008 rate:

- \* Self-haul study and promotion of private curbside service providers;
- \* Product stewardship study/services from NPSC;
- \* Study on potential bans of certain materials;

- \* Rate study that evaluates rate designs for organics including variable can rates and tiered commercial rates;
- \* C&D: Develop DPD program, Industrial Revenue bonds for C&D processing feasibility, and draft RFP;
- \* Community waste-reduction matching grants; and
- \* Market development for problem materials.

Attachment A v.4b



Public Involvement



**Deborah Faye Lawrence**

*Tend & Befriend Utopia Tray*, 2007  
Acrylic, recycled paper collage and  
varnish on recycled tin TV tray  
21.75 x 15.75 inches

# SUMMARY OF RESPONSES

## To Feedback on the Preview Draft

### Of the

## 2011 Seattle Solid Waste Plan Revision

This summary lists the notable changes made to *Seattle's 2011 Solid Waste Plan* revision in response to public review. The first draft of the Plan, the August 1, 2011 *Preview Draft*, received extensive public review, as documented in the *Summary of Stakeholder Outreach Feedback* available at Seattle Public Utilities' [Plan website](#). The feedback process is further documented in *Appendix C's Public Involvement Plan* to the *March 2012 Preliminary Draft* of the Solid Waste Plan. Most of the feedback comments addressed municipal solid waste (MSW) recommendations.

Comments on construction and demolition debris (C&D) recommendations were garnered through a parallel process, and documented in the *2011 Stakeholder Outreach and Responsiveness Summary: Proposed Construction and Demolition Recommendations in Seattle's Comprehensive Solid Waste Management Plan*, also available at the [Plan website](#).

Comments came from meetings with community groups and other stakeholder groups, letters and other comments emailed to the dedicated Plan email account, a transfer station customer survey, and an on-line survey. The on-line survey turned out to be the response method of choice, yielding the most responses: 593 persons took the survey, with 256 of those submitting 597 comments. Since the public review process amassed more than 600 comments, SPU determined the most practical way to present feedback was to summarize and group them according to the section of the Plan, by respondent groupings, in the documents discussed above. Copies of original comments are available by contacting the Plan's project manager at [spu\\_solidwasteplan@seattle.gov](mailto:spu_solidwasteplan@seattle.gov).

Seattle Public Utilities and the Seattle Solid Waste Advisory Committee reviewed all comments and took them under advisement for the next draft of the Plan, the *Preliminary Draft*. Below are brief descriptions of the notable changes that resulted from the feedback review process, as well as notable editorial improvements. They are organized by Plan chapters and sections, with highlighting on changes to the Plan's recommendations.

## Chapter - Section

### Executive Summary

- Text and charts updated to reflect changes in chapters.
- **Executive Summary - Recommendations Summary:** matrix updated to reflect recommendations changes in chapters

### Chapter I Revising Seattle's Solid Waste Plan

**1.2 and 1.3 Planning History:** Added additional Seattle solid waste planning history; corrected 1st text box to show last bullet previously hidden

**1.3.1 Regulatory and Policy Framework:** Added reference to City of Seattle Department of Planning and Development to section

**1.3.3 Keeping the Plan Up to Date:** Added more details about Seattle’s process for keeping Seattle’s Plan current

## Chapter 3 Waste Prevention

Some content restructuring for better flow

### 3.2 Planning Issues

**3.2.4 Product stewardship:** clarified cost internalization and fee discussion

### 3.3 Current Programs and Practices

**3.3.3 Residential Backyard Food and Yard Waste Composting:** Clarified Local Hazardous Waste Management Program role in funding on-site yard waste programs

**3.3.4 NWPSC:** Corrected description of Northwest Product Stewardship Council (NWPSC) and its members’ roles in state legislation. Corrected references to E-Cycle Washington electronics recycling program

**3.3.4 Additional Product Studies:** Table 3-4 Clarified source of tonnage estimates. Removed MTBE from product list

### 3.4 Alternatives and Recommendations

**3.4.1 Electronic Products Reuse, Expansion of Covered Products:** Added recommendations for keeping up electronics disposal standards

**3.4.3 Residential Backyard Food and Yard Waste Composting:** Added to reasoning for grasscycling recommendation – healthy lawns better storm water retention, reduced irrigation, reducing seasonal overloading of grass clippings (and potential odor problems) at compost facility

**3.4.4 Product Stewardship:** Restructured recommendations to better lay out goals versus recommendations. Added recommendation to support future programs based at least in part on recovery rates compared to existing programs. Added recommendation to emphasize job creation potential.

### 3.5 Measurement

**3.5.2 Industrial Materials Reuse:** Added reference to IMEX as potential data source

**3.5.6 Measurement:** Added monitoring city-wise overall waste generation to waste prevention measurement strategies

## Chapter 4 Seattle’s MSW System: Managing Discards

### 4.2 Collection

**4.2.5 Table 4-3 Collection Customer Satisfaction:** Updated to reflect more recent (2011) survey results

**4.2.4 Collection Recycling Recommendations:**

– Added recommendation to increase awareness of other (than regular curbside) existing collection services



- Added recommendation to increase education and outreach to reduce contamination
- Changed recommendation about single-family every other week garbage collection to consider for the future (versus previous recommendation to implement in 2015 in section 4.3.4)

### 4.3 Recycling

**4.3.4 Table 4-11 Status Quo Recycling Rate Projections:** 2010 data updated to actual

**4.3.4 Table 4-13 Recommended Recycling Programs Implementation Schedule:** Removed recommendation to implement single-family every other week garbage (EOW) collection in 2015, changed to consider EOW in the future and moved to section 4.2.4. More clearly flagged programs already underway.

**4.3.4 Table 4-14 Recommended Programs Recycling Rate Projections:** Updated to reflect revised projections of recycling results from changes to recommendations

**4.3.4 Figure 4-9 Recycling Rate Status Quo versus Recommended:** Updated to reflect revised projections of recycling results from changes to recommendations

### 4.5 Processing and Disposal

**4.5.2 Planning Issues:** Added new section Solid Waste Facility Siting to present State of Washington RCW 70.95.165 siting criteria and applicability to Seattle solid waste facility planning

**4.5.3 Recycling Processing:** Clarified current contracting provisions for opt-out and end dates.

**4.5.3 Designation of Recyclable Materials:** Added details on criteria for material selection. Added requirement to report changes to Washington Department of Ecology.

**4.5.3 Yard and Food Waste Composting:** Clarified current contracting provisions for opt-out and end dates. Clarified accepted materials history leading to currently accepted. Added text about SPU continuing to encourage local compost product procurement for public projects

**4.5.4 Recycling Processing Recommendations:** Added recommendation to consider testing a “dirty” Materials Recovery Facility

**4.5.4 Yard and Food Waste Composting:** Expanded recommendation to support composting capacity development to include pursuing a competitive contracting process for services after the current contract ends

**4.5.4 Yard and Food Waste Composting:** Expanded recommendation to support food packaging changes to include enhancing contamination outreach and enforcement

**4.5.4 Disposal:** Modified second recommendation to “Do not pursue or authorize direct combustion of Mixed MSW. Do not authorize such facilities.”

**4.5.4 Disposal:** Modified third recommendation to “Monitor and consider emerging conversion technologies.”

## Chapter 5 Other Seattle Solid Waste Programs

### 5.1 Construction and Demolition Debris (C&D)

**5.1.2 Planning Issues:** Restructured to include references to Resolution 30990 (*Zero Waste Resolution*) formerly discussed in 5.1.4 Alternatives and Recommendations

**5.1.2 Planning Issues, Figure 5-2 Overlap of MSW and C&D Generation in Seattle in 2007 and 2010:** Substituted 2010 figures instead for 2009 numbers. Corrected 2007 C&D Generation number.

**5.1.2 Planning Issues, Figure 5-3 C&D Generation in Seattle in 2010 All Sources:** Updated to reflect 2010 numbers instead of 2009. Explanatory text also updated.

**5.1.2 Planning Issues, Table 5-1 C&D Generation in Seattle 2007-2010:** Corrected numbers for 2007 and 2008. Explanatory text also updated.

**5.1.2 Planning Issues, Figure 5-5 C&D Recycling Rates without Concrete in 2007-2010:** Updated to include the year 2010.

**5.1.2 Planning Issues, Table 5-2 C&D Recovery Rates by Material in 2010:** 2009 numbers replaced with 2010 numbers.

**5.1.4 Alternatives Development:** Stakeholder involvement process revised and now includes discussion of the feedback process conducted for the Preview Draft of the Plan.

#### 5.1.4 C&D Recommendations

- Restructured for better clarity
- Added detail to Certification recommendation
- Revised bans on metal and cardboard to 2013 from 2012
- Revised ban on clean wood to 2014 from 2013
- Added text explaining bans begin with 1 year of education before enforcement, and that the SPU Director may delay or rescind bans if end markets collapse.
- Revised to make explicit the recommendation to require DPD permit holders to file a recycling report as a condition for their Final Permit.

### 5.3 Clean City Programs

**5.3.2 Planning Issues:** Clarified funding source for Clean City programs

**5.3.3 Current Programs and Practices:** Various text edits to improve clarity

### 5.4 Moderate Risk Waste

**5.4.2 Planning Issues:** Clarified history of the Local Hazardous Waste Plan and its updates.

**5.4.3 Current Programs:** Updated text to reflect the city's two MRW collection facilities now accept qualifying materials from CESQGs as well as residents.

**5.4.4 Recommendations:** Revised the first recommendation from "increase service hours" to "provide maximum number of service hours possible" for MRW collection services.

**5.4.4 Recommendations:** Revised second recommendation to drop reference to CESQG pilot and replace with text reflecting CESQG now collected on on-going basis

## Chapter 6 Administration and Financing the Plan

**Financing:** Four figures changed to reflect updates budget, revenue, and customer rates impacts from revised recommendations, principally from removing the recommendation for single-family every other week garbage collection.

- Figure 6-6 Projected SPU Solid Waste O&M Spending
- Figure 6-7 Status Quo and Preferred Scenarios
- Figure 6-8 Average Rates for Status Quo and Preferred Scenarios
- Figure 6-8 Status Quo and Preferred Scenarios Revenue and Rate Projections

## Appendices

**Appendix C - Public Involvement:** Now includes completed Public Involvement Plan and this Responsiveness Summary

**Appendix D - Recycling Potential Assessment (RPA) Model and Environmental Benefits Analysis:**

- Title changed from “Recycling Potential Assessment (RPA) Model”. Merges former Appendix E.
- Added new write-up “Economic Analysis of New Waste Prevention and Recycling Programs” explaining the RPA model, the model for estimating environmental benefits, and the results of environmental benefits modeling.
- Substituted former RPA reports for recommended recycling program package with reports for revised recommended recycling program package

**Appendix E - Recycling Businesses Reporting:** Title changed from “Environmental Benefits Analysis”

**Appendix F - State Environmental Protection Act (SEPA) documents:** Title changed from “Recycling Businesses”

**Appendix G - Seattle Solid Waste Advisory Committee (SWAC) Participation:**

- Title changed from “State Environmental Protection Act (SEPA) documents”
- Added documentation of SWAC participation

**Appendix H - Resolution of Adoption:** Title changed from “Seattle Solid Waste Advisory Committee (SWAC) Participation”

**Appendix I:** Deleted. Was “Resolution of Adoption”



**Public Involvement Plan (PIP)  
for the  
Solid Waste Management Plan Update**

**February 29, 2012**



## PIP Table of Contents

|                                                                  |    |
|------------------------------------------------------------------|----|
| PIP Executive Summary .....                                      | 9  |
| PIP Chapter 1. Introduction .....                                | 10 |
| PIP Chapter 2. Detailed Overview and Approach .....              | 14 |
| PIP Chapter 3. Stakeholder Audiences .....                       | 21 |
| PIP Chapter 4. PIP Outreach.....                                 | 28 |
| PIP Chapter 5. PIP Closeout, Evaluation and Reporting .....      | 40 |
| <br>                                                             |    |
| PIP Appendix 1. Language Diversity .....                         | 44 |
| PIP Appendix 2. SPU News Release on August 10, 2011 .....        | 46 |
| PIP Appendix 3. SPU Website.....                                 | 47 |
| PIP Appendix 4. Master Stakeholder List .....                    | 48 |
| PIP Appendix 5. Outreach Phone Script.....                       | 59 |
| PIP Appendix 6. Outreach Email.....                              | 60 |
| PIP Appendix 7. Surveys .....                                    | 63 |
| PIP Appendix 8. Web and Social Media/Networking Activities ..... | 75 |

## Executive Summary

This Public Involvement Plan documents the development and implementation of the process to gather public input for Seattle Public Utilities' update to its Solid Waste Management Plan (Plan). A comprehensive Public Involvement Plan (PIP) is crucial to the success of any public involvement effort. The ultimate goal of the PIP was to allow the public opportunities throughout the process to influence decisions and outcomes. The results of this PIP show a high degree of effectiveness from reaching beyond the minimum practice of general notices and general public meetings. Targeted direct contact with stakeholders and leveraging modern tools of social media has enabled SPU to gather feedback from a much larger scope of individuals. This PIP includes descriptions and results of those processes.

An important goal for outreach activities for this PIP was to move beyond traditional activities and find innovative new methods of engaging new stakeholder audiences who may provide a fresh and compelling set of perspectives. Along with reaching out to traditional stakeholders such as commercial and industrial customers, outreach activities were developed to target historically under-served and diverse populations, and the outreach methods were designed to be inclusive. Feedback garnered from PIP essentially met and in some aspects exceeded the PIP's goals. The PIP was developed in stages, and implemented in late summer through early fall 2011 when Seattle Public Utilities went public with the Preliminary Draft of the Plan.

Seattle Public Utilities engaged The Connections Group (consultant) to develop and implement a Public Involvement Plan (PIP) for the Solid Waste Management Plan update in June of 2009. The consultant's tasks and deliverables for stakeholder involvement and public review of the Preliminary Draft Plan included developing and writing a Public Involvement Plan (PIP) and then partnering with SPU to execute the PIP. A critical component of PIP execution included analyzing and writing this final report on the results of outreach activities.

An active partnership between the consultant and SPU project staff was developed throughout the PIP process. Between June of 2009 and February of 2012, the consultant worked with SPU project staff to:

- Conduct planning meetings and consultations with SPU staff, SPU Leadership, and others recommended by SPU.
- Develop, key stakeholder and general public targets.
- Develop outreach toolkits and conduct public outreach activities. Analyze outreach data and complete the Public Involvement Plan report

The following five chapters represent the sequential development and completion of the Public Involvement Plan.

- Chapter 1 Introduction
- Chapter 2 Detailed Overview and Approach
- Chapter 3 Stakeholder Audiences
- Chapter 4 Outreach Activities
- Chapter 5 Closeout, Evaluation and Reporting

The 8 appendices at the end of the PIP include detailed documentation of the lists and tools used in the outreach process, as well as documentation of the Plan's web presence and social networking success.

## Chapter 1. Introduction

### *1.1 List of Relevant Abbreviations*

PITT: Public Involvement Task Team

PIP: Public Involvement Plan

RCW: Revised Code of Washington

SPU: Seattle Public Utilities

### *1.2 Regulatory Context, Policies and Code Requirements*

**State of Washington Regulatory Code:** The State of Washington's RCW 70.95 says cities and counties must have comprehensive solid waste management plans. These plans must be reviewed every five years, and updated as needed. At this time Seattle Public Utilities (SPU) is planning the second amendment to Seattle's 1998 Solid Waste Management Plan. Seattle's plan was first amended in 2004. This Public Involvement Plan (PIP) describes the public outreach that will be done for the 2<sup>nd</sup> amendment. *Note: After this stage of PIP development began, the Washington Department of Ecology instructed SPU that the next plan update would be a revision, not an amendment.*

**City of Seattle Inclusive Public Engagement Policy:** The City of Seattle is committed to ending institutional racism. It is also committed to raising the numbers of community members who take part in civic affairs. To help these goals, the City of Seattle has an Inclusive Public Engagement Policy. This policy guides public engagement actions by City agencies, to ensure balanced and fair outcomes. The policy places special focus on traditionally under-served populations, people of color, immigrants, and refugee communities. It aims to increase access to information, resources, and civic processes for these groups.

This PIP will outline a plan for public engagement that follows these standards outlined by the City:

- The purpose of the outreach and public engagement activities will be clearly defined.
- Outreach and public engagement activities will provide fair and balanced chances and means for participation.
- Outreach and public engagement processes will be inclusive, and relevant to the varied cultures of the city. They will be well planned and carried out.
- The city will respect the time of community members.
- The city will inform participants about of the results of their engagement.
- The cultural assets and knowledge of communities will be honored and put to good use.

**City of Seattle Translation and Interpretation Policy:** The City's translation and interpretation policy says that all City Departments should translate vital documents into First Tier Languages.

There are seven languages other than English most commonly spoken in Seattle. These languages have been defined as First Tier by the Mayor's Office. They include Spanish, Cantonese, Mandarin, Vietnamese, Korean, Tagalog, and Somali. Sections of the public review draft of the solid waste plan amendment will be translated for stakeholders speaking First Tier Languages as required by policy.

The city sometimes does outreach education, or engagement that is specific to a neighborhood. When 5% or more of the people in that neighborhood speak a single language that is not English, the city will provide translation and interpretation. SPU will follow this policy when involved with neighborhood groups in the public review process for the solid waste plan update.



Next, City policy requires that invitations going to the public about community meetings say First Tier Languages interpreters will be provided. The City must be given five days advance notice in those cases. If SPU includes public meetings in the public outreach for the solid waste plan update, SPU will provide interpretation fitting the community’s needs as required by policy. The above translations and interpretations will be provided free of charge to the public.

SPU considers the solid waste Draft Plan for Public Review to be a key undertaking of their public engagement efforts. They will pursue fair and balanced methods to involve all rate-payer segments as reviewers.

**1.3 Public Involvement Task Team (PITT)**

In order to fully document how the PIP was drafted and carried out, it is important to describe the PITT and to define the roles and responsibilities of each member. The PITT is composed of SPU employees as well as employees of the consulting firm, The Connections Group. The table below summarizes each of the team members’ roles and responsibilities. More detail on roles and responsibilities is in sections 2.3.3 and 2.4.

| <b>Public Involvement Task Team</b> |                |                                                |                                                                  |                                                                                                                                                        |
|-------------------------------------|----------------|------------------------------------------------|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Organization</b>                 | <b>Name</b>    | <b>Title</b>                                   | <b>Role</b>                                                      | <b>Responsibility</b>                                                                                                                                  |
| Seattle Public Utilities            | Vicky Beaumont | Solid Waste Strategic Advisor                  | Solid Waste Comprehensive Plan Project Manager                   | Responsible for all aspects of amending Seattle’s solid waste comprehensive plan.                                                                      |
| Seattle Public Utilities            | Jenna Franklin | Strategic Communications Advisor               | Strategic Planning Advisor                                       | Scope of work development, consultant selection, strategic advice and direction to PIP consultants; coordinating SPU internal communications resources |
| Seattle Public Utilities            | Brett Stav     | Solid Waste Communications Manager             | Communications Manager for public review of the draft amendment. | Managing PIP consultants; planning, organizing, and implementing execution of the PIP.                                                                 |
| Seattle Public Utilities            | Erin McCoy     | Communications Intern, Project Delivery Branch |                                                                  | Support for SPU Comprehensive Plan Core Team                                                                                                           |
| The Connections Group               | Cathy Allen    | President and CEO                              | Lead Consultant                                                  | Messaging, training employees, community, focus groups, meetings, final outreach analysis, report and presentation                                     |
| The Connections Group               | Stanley Tsao   | Vice President                                 | Consultant                                                       | Training and outreach materials, production, budget, language                                                                                          |

**Appendix C: Public Involvement Plan**

|                       |                    |                   |            |                                                                                                                                                                                                |
|-----------------------|--------------------|-------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       |                    |                   |            | community outreach, outreach reports                                                                                                                                                           |
| The Connections Group | Kathleen Paganelli | Account Executive | Consultant | Initial stakeholder identification, language community outreach, first point of contact for stakeholders, outreach and focus group logistics, outreach reports, account management & logistics |

Team Operations: Formal check in dates and deadlines will be assigned to each task of writing and implementing the PIP. Depending on the task, the team may meet in person or communicate via phone or email on the day of the deadline. Team members will also discuss any issues that arise between deadlines via email or phone. All team members will have a chance to provide input on project decisions. The team will make decisions by consensus when possible. The SPU Project Manager will be the final decision maker.

***1.4 Roles and Responsibilities***

*1.4.1 Agency Roles and Responsibilities*

SPU is responsible for developing the Draft Plan for Public Review of Seattle’s solid waste management plan update. The agency will also make sure the update’s PIP complies with all City policies for public engagement. They will also make sure the PIP is carried out in full. Lastly, the agency will ensure that audiences understand how their feedback will be used – how it can impact the plan update.

*1.4.2 Consultant Responsibilities*

The Connections Group is responsible for developing and writing the PIP. The consultant and SPU will partner to execute the plan. The consultant will develop outreach techniques per the goals stated in the PIP, and go out into the field to execute those techniques. Consultant and SPU staff will work together to create any needed tools such as announcements, graphics, questionnaires, web pages, etc.

While outreach is on-going the consultant will prepare two types of reports. First are weekly summary reports. Second is a half-page report at the end of each outreach activity. The consultant will send these reports to the SPU project manager and SPU strategic communications manager. The consultant will also assist with compiling the reports’ contents into the PIP’s final report. Finally, the consultant will work with SPU to deliver the final report to the City Council and Mayor’s Office.

*1.4.3 Audience Roles and Responsibilities*

Persons taking part in the outreach will be asked to provide thoughtful feedback about the Draft Plan for Public Review. This feedback will help SPU make the final draft of the plan update reflect the interests of as many Seattle ratepayers as possible. Feedback should focus on the best ways to reach solid waste goals while serving the community fairly.

Each stakeholder should provide feedback that reflects their own experience, or is specific to the community they represent. Stakeholders who are selected because they are a leader from a group of

people should be able to speak for their community. For example, stakeholders from neighborhood groups should be able to tell us about waste issues of note in their neighborhood. Stakeholders from the First Tier Language communities may be asked to tell us about how well SPU sends and receives information with those language communities.

Lastly, we will ask leaders about how they wish to stay in communication with SPU after the public review process is done.

## Chapter 2. Detailed Overview and Approach

### 2.1 PIP Purpose

The purpose of this PIP is to put in writing how SPU will fulfill public review elements for its solid waste management plan update. It will also record the public review work actually done and the results of those activities.

The State of Washington (RCW 70.95) requires cities and counties with solid waste management plans to review them every five years, and update them as needed. The update process must include public involvement. This PIP outlines how SPU plans to engage stakeholders in the public review process for Seattle's update. The process aligns with other guiding policies and principles. These include WAC 365-196-600 Reviewing, Amending, and Updating Comprehensive Plans and Development Regulations.

### 2.2 Communications Goals

SPU's solid waste plan update public involvement process focuses on meeting the following communications goals:

- **No fewer than 100 diverse** members of the rate paying **public are communicated with**. Respondents will be in a position to speak as people who live in Seattle.
- **No fewer than 80 diverse** people are asked to be involved who are either SPU's Key Customer Accounts (**business and commercial** rate-payers) and/or are already engaged with SPU on solid waste topics as an individual or part of a group.
- **A diverse range of outreach activities** are selected that, clearly support SPU's commitment to upholding the policies described in section 1.2 of this document. Activities also reflect the minimum diversity standard of 17% participation from historically underserved communities.
- **Internal stakeholders are informed, educated and engaged** so that external goals for engagement can be supported and met. These include SPU and other city staff.
- **Initial assessments** of outreach activities are done **within 15 days** of activity completion so the team can make corrections toward better success.
- **"Statements of impact" are given to all respondents**. The statements will outline how their feedback folds into the process of updating the plan.
- **"Statements of explanation" are given to all groups and others who respond**. After the update is done, these statements outline how the plan will be used to shape future SPU solid waste services.
- **A tool will be created** that will allow SPU to maintain open and **ongoing lines of communication** with respondents who would like to be contacted in the future. The tool will also track stakeholder use of the tool.
- **PIP activities** will be **measured** through a post-outreach survey, data analysis, and activity critiques. A **report** will be written containing the results.

### 2.3 PIP Outreach Approach and Techniques

SPU will consider many potential outreach approaches and techniques. The pros and cons of each approach are discussed below.

The team will choose approaches that will best match the outreach goals within the limited outreach budget and staffing. Approaches should result in high quality feedback, from the most stakeholders. They should also be as equitable as possible.

The process for choosing approaches will be found in Chapters 3 and 4. The chosen approaches will also be explained. SPU will be flexible with approaches in case the outreach budget changes, or because results from an approach differ from what was expected.

### *2.3.1 Use of Public Notifications and Advertisements*

SPU usually places two postings in the Daily Journal of Commerce for any formal public involvement process. SPU will consider this requirement and consider the following other public notifications and advertisements:

- Press opportunities to engage the larger media outlets such as the Seattle Times to inform customers about the PIP.
- The **Seattle Channel** for a special program on the Solid Waste Comprehensive Plan Amendment.
- A specific **solid waste management plan webpage** on the SPU website where the general public can sign up to review a chapter of the Draft Plan for Public Review.
- Notices about the Solid Waste Management Plan update on the **SPU blog** and direct interested parties to the plan webpage.
- **Neighborhood blogs** – create local blog stories where customers are directed to the plan webpage. Customers can also post comments directly on the blog page.
- **Internet banner advertisements** that will show only on Seattle websites and in local blogs that link to the plan webpage and invite the public to comment.
- **Targeted advertisements** in print media such as the Seattle Times with directions to the plan webpage.
- **Advertisements in the First Tier Language media outlets.**
- **New stories developed with ethnically oriented community groups**, and placed in the First Tier Language media outlets.

### *2.3.2 Use of Mail Surveys and Telephone Polls*

While telephone polling or mail surveys provide a large quantity of data, they do not provide as high quality data as two way conversations. They are restricted to short questions and answers and SPU cannot ask customers why they answered one way or the other. In addition, they have a low response rate, which can cause them to be very expensive. On average, people polled amount to less than 18% of people called. A typical 12 minute telephone poll with 1,000 samples could easily cost \$35,000 and more.

In addition, regular phone surveys often require English language fluency and a landline phone in the home. People being surveyed must also be home during a narrow window of time during the day or week. Many historically underserved peoples rely only on cell phone service. They also feel most fluent in languages besides English, or have non-traditional hours of being at home. More often than not, mail surveys return less than 5% of people mailed. They are a low return and high cost outreach technique. A standard mail survey with 1,000 samples could cost \$15,000 and more.

### *2.3.3 Use of Public Engagement (2 way conversation/dialogue)*

Two way conversations are a very good way to get feedback from customers about what is important to them. They allow for new ideas to emerge more easily and this will help SPU learn more about needs of specific communities. For example, First Tier Language communities, communities with diverse cultures, and certain city locales may have concerns that differ from each other.

## Appendix C: Public Involvement Plan

SPU also believes qualitative data will be the most effective use of the consultant's limited budget. SPU expects that leading members of the community will have a very high response rate. Their responses will also be more insightful and targeted to specific communities than responses in a poll or survey. Lastly, SPU is excited to make use of more personal meetings to grow new, lasting relationships with diverse communities. A detached survey or poll would not be very effective at forming those lasting connections.

SPU will consider the following options for two way dialogue:

### 1) **Focus groups:**

About three focus groups could be done within the consultant's contract budget, reaching only 45 people maximum. Without asking people to read the plan ahead of time (most would likely not), there would be a lot of material to get through in the time span of a typical focus group (1-2 hours). This would amount to a serious limit on the quantity and quality of review and feedback. Lastly, it could be complex to address the specific issues of diverse communities in a single conversation.

### 2) **Identifying and contacting stakeholders to review selected chapters:**

Some stakeholders will be very easily recruited for this public outreach, and at a low cost. These include stakeholders inside SPU and the City, key customers, existing community contacts, and persons who opt in through the SPU website or blog post. Recruiting more new community contacts would be cheaper than a focus group, and could reach the same or a larger number of people. Individual talks will allow in-depth information to come forth about each group. This approach will make it much easier work new or clarified information into conversations.

The bullets below lay out who will do what for public engagement through two-way dialogue.

SPU will be responsible for the following tasks:

- Talking to core team members to brainstorm how to tap existing employee links to the community. Some staff may already be active members of community groups that are potential stakeholders.
- Developing materials such as talking points or a letter for staff to use when contacting existing contacts who are potential stakeholders.
- Requesting involvement from internal stakeholders.
- Requesting involvement from key customers.
- Requesting involvement from existing community contacts.
- Providing translated materials as necessary and distributing materials to neighborhood and community organizations.
- Training and working with the targeted 100 stakeholders for long term media strategies and recruiting them to be future endorsers or commentators for SPU.

The consultant will be responsible for:

- Figuring out a list of 100 stakeholders from the diverse populations with whom we wish to engage. These stakeholders will be leaders who can speak not only for themselves, but can provide insights into the wants and needs of their communities as a whole.
- Asking each stakeholder to review one or several chapter(s) of the updated plan.

- Creating and using more than one kind of review format based on what will work best for the particular stakeholder. For example, it may work best for a business person reviewing a finance chapter of the plan to answer an online survey and provide added feedback via email. On the other hand, it might be more strategic to have an SPU employee do a presentation and discussion with an activist from a neighborhood group.
- Providing training and assisting with the materials developed for SPU employees who will lead presentations and discussions.
- Working with SPU to develop any other materials such as online surveys.
- Documenting and reporting on all PIP activities in a PIP report that will be available to stakeholders.

**2.4 Key Messages**

The project team will develop key messages when the recommendations of plan updates are mostly complete. The overall key message is that the plan update retains the vision and goals of the original 1998 comp plan.

Who does what, SPU or the consultant, for developing key messages is in the rest of this section.

For a summary table of roles and responsibilities by team member, see the table in section 1.3.

SPU will be responsible for:

- Developing the Draft Plan for Public Review.
- Providing simple and clear summaries of the Draft Plan chapters for the consultant.
- Supporting the consultant in the development of relevant materials, graphics, and web pages – this is a shared responsibility.

The consultant will be responsible for:

- Working with the First Tier Language stakeholders to see if we have to adjust key messages for language communities.
- Working with SPU to develop key messages and materials.
- Working with SPU to review the Draft Plan for Public Review and find suitable chapters for various stakeholders.
- Supporting SPU in the development of relevant materials, graphics, and web pages – this is a shared responsibility.

**2.5 Risks and Barriers**

The purposed of this section is to list the potential risks and barriers that may prevent achievement of the PIP goals. It also includes present best ideas for dealing with the risks and barriers.

| Risk               | Description                                                                                                                                | Approach                                                                                                                            |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| PITT staff changes | Especially given the long time period between drafting and implementing the PIP, it is possible that there will be a change in PITT staff. | SPU and the Connections Group will carefully document all work in writing so that a new team member may easily pick up the project. |

**Appendix C: Public Involvement Plan**

|                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Funding changes</p>                                                                                                                    | <p>Significant budget changes would impact the scope of the PIP.</p>                                                                                                                                                                                                                                                                                           | <p>The Connections Group will draft a PIP that includes a wide variety of outreach approaches. SPU may draw from these approaches in the case that the PIP scope needs to be changed.</p>                                                                                                                                                       |
| <p>Significant Comprehensive Plan Amendment Re-writes</p>                                                                                 | <p>If the Comprehensive Plan Amendment is changed significantly in the middle of executing the PIP, some new material may not be covered.</p>                                                                                                                                                                                                                  | <p>Some of the approaches in the PIP are aimed at engaging interested parties at any time during the public engagement. For example, the PIP webpage and blog. SPU will be ready to assign new material to these stakeholders. This should cover the material not already being reviewed by the 100 recruited stakeholders.</p>                 |
| <p>Imperfect randomness</p>                                                                                                               | <p>Stakeholders who sign up to review a chapter online are not random because they are self selecting. In the 100 stakeholder component SPU will ask organizational leaders to help us communicate with their members. Members of the same organization have certain traits in common, so we will not be reaching a truly random selection of individuals.</p> | <p>Selecting non-random stakeholders may not be bad for SPU. We aim to get feedback about particular neighborhoods and communities. However, SPU will also employ the broadest possible outreach approaches given our budget. We will engage the largest number of diverse customers possible.</p>                                              |
| <p>Budget cut/staff changes</p>                                                                                                           | <p>The PIP will raise expectations for future communication needs. If there are budget cuts, SPU may not have the resources to handle the additional demands. SPU may also not have the resources to follow up with all the new contacts after outreach.</p>                                                                                                   | <p>Risk management strategies include making use of existing internal resources such as Community Relations Development and annual customer service surveys. And leveraging opportunities funded for other outreach efforts. To ensure contacts are maintained and budget cuts do not threaten the success and completeness of this effort.</p> |
| <p>First Tier Language communities and stakeholders not interested in the solid waste plan but have other priorities with SPU instead</p> | <p>Non-English speakers have a more difficult time communicating with SPU about service issues. They will understandably be eager to use the opportunity of communicating with SPU staff to raise any unaddressed issues.</p>                                                                                                                                  | <p>SPU will train representatives who are doing community outreach to note any issues and tell customers that someone will get back to them. They will then ask the customers to focus on the review process so that service may be improved in their community in the future.</p>                                                              |



|                                                                                                    |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>SPU will cause offense by not selecting certain stakeholders.</p>                               | <p>In the 100 stakeholder outreach, SPU will inevitably leave out individuals of organizations would have liked to be involved.</p>                                                                                                                                                | <p>When faced with a question of why an individual or organization was not included in the 100 stakeholders, SPU will explain our goal of fairly representing different populations. (Perhaps another stakeholder who represents the same community was included). Then we will offer that person or group to take on a chapter for review.</p> |
| <p>Due to the long outreach timeline, organizations and their people (stakeholders) may change</p> | <p>SPU aims to avoid duplication of work that would occur if we recruited leaders from organizations too early and the leadership changed by the time of the outreach. There is also the potential that the selected organizations will cease to exist or change dramatically.</p> | <p>The consultant will prepare a list of stakeholders and contact information, but will wait until the outreach is about to take place before recruiting individuals. We will also collect information for a larger group of organizations than we need so that we can quickly select new organizations if needed.</p>                          |
| <p>Due to the long outreach timeline, opinions and public inputs may change.</p>                   | <p>Ideas and inputs received in the beginning of 2010 less relevant to changes implemented in the end of 2010.</p>                                                                                                                                                                 | <p>SPU will encourage audiences to take a long term view when reviewing the Draft Plan for Public Review and explain when the next updates will be made.</p>                                                                                                                                                                                    |

**2.6 Participation Goals and Metrics**

This section defines each of the PIP participation goals. Participation goals are first defined by audience or stakeholder group. Then they are defined by what “successful participation” means for that group.

SPU’s recruitment goals for this PIP reflect numbers that are in proportion to, or exceed, past SPU stakeholder feedback work. Setting the goals this way will allow SPU to appropriately measure against prior efforts.

“Successful Participation” for all audiences will include these aspects:

- Written feedback, by the respondent or written by outreach staff for them.
- The feedback expresses a feeling, position, or some other response.
- The feedback reflects that the respondent reviewed all of the plan section they agreed to look at.

Participation goals, level of review, and response will be measured on a point system. Goals reflect anticipated participation levels by group and level of existing engagement. For example, internal staff is highly engaged and would be expected to complete the assignment within the context of their job. In this example 25 participants multiplied by 20 points per review of the entire plan = a goal of 500 points for that audience segment.):

**Points for amount reviewed**

Review of Entire Plan = 20

Single Chapter Review = 15

Single Section Review (more than one paragraph and less than once chapter) = 10

Single Paragraph Review = 5

Failure to Complete Review = 0

**Goals by Stakeholder Group**

| <b>Stakeholder Group</b> | <b>Responses/Reviews Completed</b> | <b>Goal</b> |
|--------------------------|------------------------------------|-------------|
| Internal (SPU staff)     | 25                                 | 500 Points  |
| Key Customers            | 25                                 | 370 Points  |
| Existing Community       | 30                                 | 300 Points  |
| Diverse Communities      | 100                                | 500 Points  |

Audience segments that represent historically underserved stakeholder groups will be tracked by language or other demographic data. Data tracked will be the same as data collected in SPU customer surveys. This is to assess and report on the how well the campaign reached the inclusive outreach goals outlined in the Appendix 1. Language Diversity and in other sections of this document.

Consultant staff will initiate contact with the Diverse Communities and work with SPU to assign the appropriate chapter for each stakeholder to review. The consultants will be the point of contact for receiving feedback from these stakeholders. These stakeholders may also be leaders from organizations that have large memberships and strong internal communications mechanisms such as an email list and/or newsletter distribution. This will allow for participation tracking and reporting by community group or community leader. The team will then be better able to determine where inclusive engagement efforts were more or less successful.

Lastly, the consultant will identify and track the 100 diverse stakeholders' interests for a continued relationship with SPU. Such tracking and detailed records of all stakeholders will be used to solicit participation in post activity surveys. The surveys will help determine our overall success in reaching this PIPs communication and participation goals.

## Chapter 3. Stakeholder Audiences

### 3.1 Definition of Affected Communities

Chapter two stated SPU's goal: that at least 180 stakeholders will review a portion of the solid waste plan update and provide feedback. The chart on page 11 separated those 180 stakeholders into these four groups:

- 100 diverse members of the rate paying public
- 25 people who are business and commercial rate-payers
- 30 people who are already engaged with SPU on solid waste topics
- 25 members of SPU's internal team

Feedback from participants in each of these groups will be important in unique ways. It is vital for SPU to get separate feedback from residential customers and commercial customers because they have very different solid waste needs. Likewise, people who are already engaged with SPU have special interests on specific solid waste topics. Lastly, the internal team is the most informed about how services are actually carried out by SPU. They can talk about the benefits and challenges of putting plan updates into action.

SPU also knows that different neighborhoods experience different issues with solid waste service. Within each of the groups described above, SPU will recruit stakeholders that represent neighborhoods as evenly as possible. (See list of neighborhoods in 3.5 Stakeholder Database).

Lastly, different businesses and organizations will have different interests in terms of solid waste services. Within each group and neighborhood, SPU will try to recruit individuals with a range of solid waste interests. The chart below shows each interest area and examples of organizations that serve those interests. SPU will identify individuals at these types of organizations as potential participants.

#### Stakeholder Interest Areas

| Interest Area                                 | Organization examples                                                |
|-----------------------------------------------|----------------------------------------------------------------------|
| Internal SPU                                  | SPU Staff                                                            |
| General Public                                | Ratepayers                                                           |
| Public Affairs                                | Civic Groups<br>Political action groups                              |
| Local Government Agencies                     | Other city departments<br>Other local government (King Co., SKCHD)   |
| Solid Waste Industry                          | Collectors<br>Haulers<br>Processors                                  |
| Solid Waste Special Interest                  | Materials brokers<br>Waste /recycling/organics technology developers |
| Environment, Livability and Growth Management | Neighborhood sustainability groups<br>Environmental non-profits      |

**Appendix C: Public Involvement Plan**

|                                               |                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Neighborhood                                  | Neighborhood Institutions, Organizations and Councils<br>Educational Organizations                                                                                                                                                                                                                  |
| Business                                      | Business Associations<br>Chambers of Commerce<br>Business Owners                                                                                                                                                                                                                                    |
| Media                                         | Newspapers<br>TV stations<br>Radio stations<br>Blogs                                                                                                                                                                                                                                                |
| Faith Based                                   | Faith based non-profits<br>Places of worship                                                                                                                                                                                                                                                        |
| Groups that Produce Large Quantities of Waste | Property Owners<br>Restaurants                                                                                                                                                                                                                                                                      |
| Construction or Demolition                    | Construction of Demolition Companies                                                                                                                                                                                                                                                                |
| Historically underserved populations          | Organizations that serve individuals who may have lack of access to service due to language, culture, race, ethnicity, social, economic, educational, medical, disabilities, or other issues<br>Organizations with social justice missions<br>For a list of languages see 3.5 Stakeholder Database. |

**3.2 Identification of Stakeholders**

SPU and the consultant will identify more than 180 potential outreach participants. This is needed to guarantee responses from at least 180 stakeholders. SPU will be in charge of identifying potential participants in three of the stakeholder groups. Those are business and commercial rate-payers, people who are already engaged with SPU on solid waste topics and members of SPU’s internal team. Existing lists will be the main source of information for these groups.

The consultant will be in charge of identifying diverse members of the rate paying public. This list will be inclusive as described in chapter one. It will also be balanced in terms of neighborhood and interest area. The consultant will identify potential participants using existing contacts and by planning new ones.

At the time of writing this chapter, existing lists from both SPU and the consultant had been combined to create an initial master list of 255 stakeholders. Existing lists from SPU included:

- Community Contacts
- Neighborhood Contacts
- Ethnically and Culturally Diverse Contacts
- Stakeholders Brainstormed by the Core Team for the Solid Waste Plan Update

Existing lists from the consultant included:

- Community Contacts
- Neighborhood Contacts
- Ethnically and Culturally Diverse Contacts
- Low-Income Assistance Contacts

- Civic Contacts
- Environmental Interest Contacts
- Youth Program Contacts
- School Contacts
- Business Contacts

As the identification of stakeholders continues, SPU and the consultant will work together to brainstorm and track overlap between groups. The project manager will be in charge of approving the final list of potential participating stakeholders before beginning outreach activities.

As described in 2.3.1 public notifications and advertisements will be used. This will make sure that outreach goes beyond the targeted stakeholders to the general public. Any rate payer who wishes to review the solid waste plan update and provide feedback will have the chance to do so.

Potential outreach participants will be identified based on their known stakeholder type. But at the time of outreach we may learn that some participants represent additional stakeholder types. For example we may learn that a stakeholder who was identified as a small business owner also speaks one of the Tier One or Tier Two languages. In order to track how inclusivity goals are being met, it is important collect complete information about each participant. SPU and the consultant will develop a standard set of demographic questions to be asked of every participant at the time of outreach. The protocol for asking those questions will also include a set of statements that explains the reason for collecting demographic data and assures participants that the information will be kept confidential.

### 3.3 Outreach Approaches

In order to reach the minimum 180 targeted stakeholders, SPU and the consultant will use many different outreach methods. SPU and the consultant will think carefully about which approach is best for each individual or group of potential participants.

| Approach Name    | Approach Description                                                                                                                                                        | Expected Use with Stakeholders                                                                        |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Transfer Station | Transfer station staff ask regular customers if they would like to take a section of the report home to review. They return it next time they come to the transfer station. | With neighborhood ratepayers.                                                                         |
| Interview        | One-on-one interview between project staff and participant. By phone or in person. Pre-arranged. Combination of pre-defined and open-ended questions.                       | With individuals (vs. groups) from various interest areas.                                            |
| Meeting          | Similar to interview but with a group.                                                                                                                                      | With groups from various interest areas.                                                              |
| Email            | Email individuals asking them if they would like to review a chapter.                                                                                                       | With individuals who are representing their business and ratepayers who have emailed SPU in the past. |

## Appendix C: Public Involvement Plan

|                                                                  |                                                                                                                                                                                            |                                                                                                          |
|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| News Media & Blog or Website                                     | Post the draft plan for public review on the web. Include a system for giving feedback online. Advertise the site in all outreach materials.                                               | With ratepayers. Available to anyone who wants to comment but who was not included in targeted outreach. |
| Direct Mail                                                      | Selected neighborhoods will receive direct mail. It will invite them to visit the website or call SPU to participate in the review of the solid waste plan.                                | With neighborhood ratepayers.                                                                            |
| Community Gathering                                              | Asking individuals congregated in public places to review a small section (paragraph) or short summary of the plan and give feedback. Combination of pre-defined and open-ended questions. | In neighborhoods. Especially in those where it's been difficult to pre-identify other stakeholders.      |
| Community Organization Office & Library & City Government Office | Outreach materials will be left at these locations for individuals to pick up if they are interested.                                                                                      | With ratepayers. Available to anyone who wants to comment but who was not included in targeted outreach. |

### 3.4 Master Timeline for Outreach Activities

Below is an estimate of the order in which SPU and the consultant will complete the outreach tasks. The public draft document is in the process of being completed. Once it is ready the order of these tasks will be adjusted as needed and due dates will be assigned.

1. Finalize the stakeholder database
2. Populate the database with potential participants
3. Approve all potential participants and confirm that inclusivity goals are on track to be met
4. Message development for internal communication with target stakeholders
5. Training with SPU staff, Solid Waste Management Committee and/or others recommended by SPU
6. Write impact statements to be given to participants
7. Design any necessary outreach materials
8. Select appropriate section or summary of the solid waste plan update for each potential participant
9. Go online with the solid waste management plan webpage
10. Begin outreach

### 3.5 Stakeholder Database

SPU gave the PIP consultants an Access database to organize information about all of the individuals involved in this outreach process. That includes everyone targeted for review (whether or not they agree to participate). It also includes people who refer themselves to be a reviewer.

The purpose of the database is to track the status of review for each stakeholder. It will also be used to track how well inclusivity goals are being met among participants. Lastly, the database will allow the team to analyze outreach results by different parameters, such as neighborhood or historically

underserved population’s categories. The database is flexible and will likely evolve as new stakeholders and new goals for analysis of the stakeholders are identified. Database fields and possible values can be changed. Currently the database includes the following fields:

| Field type           | Field                                 | Possible Values                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Basic Information    | Name, Title, Organization             | Fields for first and last Name<br>Fields for phone, address, email, website                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                      | Type of SPU account <sup>1</sup>      | <ul style="list-style-type: none"> <li>• Key account</li> <li>• Single family</li> <li>• Commercial business</li> <li>• Multi-family</li> <li>• Other</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                            |
|                      | Other                                 | Preferred contact method or other contact notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Targeted Populations | Type of stakeholder                   | <ul style="list-style-type: none"> <li>• Internal SPU</li> <li>• General Public</li> <li>• Public Affairs</li> <li>• Local Government Agencies</li> <li>• Solid Waste Industry</li> <li>• Solid Waste Special Interest</li> <li>• Environment, Livability, Growth</li> <li>• Neighborhood Interest</li> <li>• Business Interest</li> <li>• Media Outlet</li> <li>• Faith Based Group</li> <li>• Large Volume Waste Producer</li> <li>• Construction/Demolition</li> <li>• Human Services Organization</li> <li>• Other</li> </ul>                                           |
|                      | Historically Underserved <sup>2</sup> | Does Not Represent Historically Underserved Language <sup>3</sup> <ul style="list-style-type: none"> <li>• Amharic speaking</li> <li>• Cambodian/Khmer speaking</li> <li>• Chinese speaking</li> <li>• Japanese/Nihongo speaking</li> <li>• Korean speaking</li> <li>• Lao/Laotian speaking</li> <li>• Phaasao speaking</li> <li>• Oromo/Oromiffa speaking</li> <li>• Russian/Eastern European speaking</li> <li>• Somali/af Soomaali speaking</li> <li>• Spanish speaking</li> <li>• Tagolog speaking</li> <li>• Thai/Phasa Thai speaking</li> <li>• Vietnamese</li> </ul> |

**Appendix C: Public Involvement Plan**

|                  |                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  |                                | <p>Race/Ethnicity<sup>4</sup></p> <ul style="list-style-type: none"> <li>• Black or African American</li> <li>• Asian</li> <li>• Native Hawaiian or Other Pacific Islander</li> <li>• Hispanic or Latino</li> <li>• American Indian or Alaska Native</li> <br/> <li>• Other</li> <li>• None</li> <li>• Senior</li> <li>• Youth</li> <li>• Low-income</li> <li>• African American</li> <li>• Other Immigrant/Refugee</li> <li>• Other</li> </ul>                                                                                                                                                                                               |
|                  | Neighborhood Zone <sup>5</sup> | <ul style="list-style-type: none"> <li>• Ballard</li> <li>• Northwest</li> <li>• North</li> <li>• Northeast</li> <li>• Lake Union</li> <li>• Magnolia/Queen Anne</li> <li>• Capitol Park/Madison Park/Miller/First Hill</li> <li>• Central Area/Squire Park/Madrona/Leschi</li> <li>• Duwamish/SoDo/Southpark/Georgetown</li> <li>• Jefferson/Beacon Hill/New Holly</li> <li>• Downtown Core/Pioneer Square/Downtown/Belltown</li> <li>• West Seattle – West of Delridge</li> <li>• West Seattle – East of Delridge</li> <li>• Mount Baker/North Ranier/Seward Park</li> <li>• Columbia City/Rainier Beach, Other</li> <li>• Other</li> </ul> |
| Outreach Process | Follow up needed               | Yes/no                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                  | Review by                      | Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                  | Review points allocated        | Per PIP chapter section 2.5 (0,3,5,10,15,16,17,18,20)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                  | Contact owned by               | <ul style="list-style-type: none"> <li>• Consultant</li> <li>• SPU</li> <li>• Mayor’s Office</li> <li>• City Council</li> <li>• Other</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                  | Method of contact              | <ul style="list-style-type: none"> <li>• Transfer station</li> <li>• In person</li> <li>• Meeting</li> <li>• Email</li> <li>• News media</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |



|  |                              |                                                                                                                                                                                                                                                                                                                              |
|--|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |                              | <ul style="list-style-type: none"> <li>• Blog or website</li> <li>• Phone</li> <li>• Direct mail</li> <li>• Community gathering</li> <li>• Community organization office</li> <li>• Library</li> <li>• City government office</li> <li>• Other</li> </ul>                                                                    |
|  | Level of review <sup>6</sup> | <ul style="list-style-type: none"> <li>• Entire document (20 pts)</li> <li>• Multiple chapters (18 pts)</li> <li>• Multiple sections (17 pts)</li> <li>• Multiple paragraphs (16 pts)</li> <li>• Single chapter (10 pts)</li> <li>• Single paragraph (5 pts)</li> <li>• Declined (0 pts)</li> <li>• Other (3 pts)</li> </ul> |
|  | Status of review             | <ul style="list-style-type: none"> <li>• Declined</li> <li>• Accepted, not completed</li> <li>• Accepted, completed</li> <li>• Accepted, later declined</li> <li>• Unable to contact or lost</li> </ul>                                                                                                                      |

<sup>1</sup>Note: If a stakeholder represents two types of SPU accounts (for example a business owner who is also a ratepayer at home) they will be asked which perspective they wish to review the plan from.

<sup>2</sup>Note: Some stakeholders will fit more than one historically underserved category. The database includes a primary and secondary field for historically underserved.

<sup>3</sup> Languages include all Tier 1 and Tier 2 languages, meaning at least 2,000 Seattleites speak it.

<sup>4</sup>Race and Ethnicities include all that are included in the Census except White, which is not considered underserved.

<sup>5</sup>Neighborhood Zone (Defined by the Department of Neighborhoods).

<sup>6</sup>Level of Review (This field is the planned level of review, after review is complete, the correct number of points will be entered into the Review Point Allocated field).

The initial stakeholder list mentioned in 3.2 has been organized to include the same fields as the database for easy importing when the time comes to populate the database.

## Chapter 4. PIP Outreach

### 4.1. Outreach Tools and Tactics

#### Overview

The project team created the initial stakeholder outreach list in chapter three in spring of 2010 and PIP outreach activities were initially scheduled for summer of 2010. The timeline for the PIP process, however, was extended due to a change of timeline at SPU to create the Preview Draft of the Seattle Solid Waste Plan and the related outreach tools.

The project team updated the stakeholder outreach list in spring of 2011 and added new community stakeholders from neighborhoods, historically underserved groups, businesses, and industrial customers. The final master list from both SPU and the consultant team grew to over 505 stakeholders from the initial list of 255 stakeholders in 2010.

The project team also decided to conduct a parallel outreach effort for construction and demolition debris (C&D) recommendations. A separate report documents those activities. However, there was some overlap in effort. The activities described in this PIP chapter were mainly for feedback on all the other Plan recommendations that pertain to municipal solid waste (MSW).

As stated in chapter two, the goal was to contact at least 180 stakeholders and have them review a portion of the draft Solid Waste Management Plan and provide feedback. In addition, SPU believes gathering data and speaking directly with targeted community stakeholders would be the most effective use of the consultant's limited budget.

The consultant team worked with SPU to develop the public outreach tools including draft chapters from Solid Waste Management Plan, announcements, questionnaires, online survey, website, and additional materials deemed important for the PIP outreach activities in July of 2011.

SPU created the website. Though not originally planned, the project team also created an online survey linked to the website, along with the planned dedicated email link. The website provided a convenient platform for stakeholders to review draft Solid Waste Management Plan materials and provide both quantitative and qualitative feedback. Response to the voluntary survey exceeded expectations, turning out to be the feedback method of choice for most respondents.

In summary, the project team provided a variety of ways for stakeholders to provide input during the PIP outreach process:

- An online survey at [www.seattle.gov/util/SolidWastePlan](http://www.seattle.gov/util/SolidWastePlan)
- Dedicated email addresses at [SolidWastePlan@seattle.gov](mailto:SolidWastePlan@seattle.gov) and [spusurvey@connectionsgroup.org](mailto:spusurvey@connectionsgroup.org) for stakeholders to send back specific comments and questions to SPU and the consultant team
- Presentations at community groups to share information and gather feedback.
- Intercept survey at transfer stations
- Feedback session with solid waste activists
- Feedback sessions SPU work groups

In all, SPU received about 23 written comments pertaining to MSW recommendations, plus others on C&D (documented separately). Comments from community group meetings are captured in those meetings' minutes. Nearly 600 people took the on-line survey between August 1 and October 9, 256 of

whom also gave comments. The transfer station survey gathered 99 responses and it concluded on October 15.

#### *4.1.1. Roll-out and Announcements for Outreach Activities*

SPU posted the Plan and dedicated email address on the Plan web page, on August 1, 2011 without announcement. SPU added the link to the on-line survey on August 9. On August 10, SPU issued a news release announcing the draft plan. The news release went out to all media outlets, and contained links to the online survey and draft chapters from Solid Waste Management Plan.

The consultant team began their PIP outreach activities on August 1, 2011 by starting to contact the stakeholders on the master list.

The project team did not purchase any media presence due to budget constraints. But several local news blogs and community websites posted the information about the plan and links to the survey and e-mail box.

See Appendix 2. SPU News Release on August 10, 2011.

#### *4.1.2. Project Graphics and Identity/Brand*

The project team did not develop graphics or other branding tools specific to the outreach effort. Any graphics used were copied from the Plan document. A key message included in outreach materials was that the plan would provide a “roadmap” to guide the city’s efforts toward waste prevention, recycling, composting, and collections.

The Plan website was the most important tool for giving the Plan outreach identity. With various approaches necessary to engage the different stakeholders, the outreach team decided it was important to have one place where all stakeholders could review the draft Solid Waste Management Plan and provide feedback to SPU. The consultant team worked with SPU to set up the website with links to the online survey and dedicated email, and provided background and details of the draft Solid Waste Management Plan.

See Appendix 3. SPU Website.

#### *4.1.3. Project Documents*

Below is a list of project documents, stakeholder list and tools the project team used to conduct the PIP outreach process.

### **1. Draft Solid Waste Management Plan – 2011 Revision**

- [Table of Contents](#)
- [Executive Summary](#)
- [Matrix of Recommendations](#)
- [Chapter 1 – Revising the Plan](#)
- [Chapter 2 – Seattle Solid Waste Trends](#)
- [Chapter 3 – Waste Prevention](#)
- [Chapter 4 – Managing Discards](#)
- [Chapter 5 – Other Solid Waste Programs](#)

## Appendix C: Public Involvement Plan

- [Chapter 6 – Administration and Financing](#)
- [Appendix A - Appendix A](#) – Glossary
- [Appendix B](#) – Zero Waste Resolution 30990
- Appendix C – Public Involvement Report
- [Appendix D](#) – Recycling Potential Assessment (RPA) Model
- Appendix E – Environmental Benefits Analysis
- [Appendix F](#) – Recycling Businesses
- Appendix G – State Environmental Protection Act (SEPA) documents
- Appendix H – Seattle Solid Waste Advisory Committee (SWAC) Participation
- Appendix I – Resolution of Adoption

### 2. Master Stakeholder List

The master list contains over 505 stakeholders from the following interest areas:

| Interest Area                                 | Targeted Organization                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Internal SPU                                  | <ul style="list-style-type: none"> <li>• SPU Staff</li> </ul>                                                                                                                                                                                                                                                                            |
| General Public                                | <ul style="list-style-type: none"> <li>• Ratepayers</li> </ul>                                                                                                                                                                                                                                                                           |
| Public Affairs                                | <ul style="list-style-type: none"> <li>• Civic Groups</li> <li>• Political action groups</li> </ul>                                                                                                                                                                                                                                      |
| Local Government Agencies                     | <ul style="list-style-type: none"> <li>• Other city departments</li> <li>• Other local governments</li> </ul>                                                                                                                                                                                                                            |
| Solid Waste Industry                          | <ul style="list-style-type: none"> <li>• Collectors</li> <li>• Self Haulers</li> <li>• Processors</li> </ul>                                                                                                                                                                                                                             |
| Solid Waste Special Interest                  | <ul style="list-style-type: none"> <li>• Materials brokers</li> <li>• Waste /recycling/organics technology developers</li> </ul>                                                                                                                                                                                                         |
| Environment, Livability and Growth Management | <ul style="list-style-type: none"> <li>• Neighborhood sustainability groups</li> <li>• Environmental non-profits</li> </ul>                                                                                                                                                                                                              |
| Neighborhood                                  | <ul style="list-style-type: none"> <li>• Community Family and Senior Organizations</li> <li>• Neighborhood Institutions, Organizations and Councils</li> <li>• Educational Organizations</li> </ul>                                                                                                                                      |
| Business                                      | <ul style="list-style-type: none"> <li>• Business Associations</li> <li>• Chambers of Commerce</li> </ul>                                                                                                                                                                                                                                |
| Faith Based                                   | <ul style="list-style-type: none"> <li>• Faith based non-profits</li> </ul>                                                                                                                                                                                                                                                              |
| Groups that Produce Large Quantities of Waste | <ul style="list-style-type: none"> <li>• Property Owners</li> <li>• Restaurants</li> </ul>                                                                                                                                                                                                                                               |
| Construction or Demolition                    | <ul style="list-style-type: none"> <li>• Construction of Demolition Companies</li> </ul>                                                                                                                                                                                                                                                 |
| Historically underserved populations          | <ul style="list-style-type: none"> <li>• Organizations that serve individuals who may have lack of access to service due to language, culture, race, ethnicity, social, economic, educational, medical, disabilities, or other issues</li> <li>• Organizations with social justice missions</li> <li>• Language organizations</li> </ul> |
| Large SPU commercial garbage accounts         | <ul style="list-style-type: none"> <li>• Various businesses in the city</li> <li>• Businesses generating plastic film</li> </ul>                                                                                                                                                                                                         |

Between August 1 and October 15, 2011, the project team – including four SPU staff, one C&D consultant for plastic film, and four Connections staff – made multiple rounds of attempts to contact the 505 stakeholders on the master list.

Master stakeholder list in Excel file format is listed in Appendix 4. Master Stakeholder List.

### 3. Outreach Phone Script

The consultant developed a phoning script for use by the consultant and SPU staff for consistent messaging. Script goals were to establish relationship for on-going interaction, as well as to introduce the Plan and solicit feedback.

See Appendix 5. Outreach Phone Script.

### 4. Outreach Email

The consultant developed an email template for use by the consultant and SPU staff for consistent messaging and proper links to the online documents and feedback tools. The goals for the email template were to establish a new relationship with stakeholders, as well as to introduce the Plan and solicit feedback for the online survey.

See Appendix 6. Outreach Email.

### 5. SPU Meeting Materials

SPU developed handouts for the groups with which they met, sometimes tailoring them for the group. For instance, some handouts highlighted recommendations affecting the commercial sector for meetings with business representatives. Others included background data, such as for recycling performance. The core components of the meeting materials included

- List of key recommendations
- Matrix of recommendations by sector
- Outreach cards for reference to website and e-mail

#### *4.1.4. Key Topic Questionnaire: 3-6 visioning or other statements to ensure focused consistent Feedback*

As mentioned at the beginning of this chapter, the consultant team worked with SPU to develop the public outreach tools in July of 2011. The main goal of the tools was to provide a convenient platform for stakeholders to review draft Solid Waste Management Plan materials and provide both quantitative and qualitative feedback.

Toward this end the project team decided to have one master questionnaire, or survey, for use in the PIP outreach activities and added specific questions tailored to five targeted demographics:

1. Seattle resident of a single-family home (detached, or up to 4 units)
2. Seattle resident of a multi-family home (condo or apartment of 5 or more units)
3. Manager of a multi-family residence in Seattle (of 5 units or more)
4. Seattle business owner/manager
5. Construction and demolition (C&D) professional serving Seattle

## Appendix C: Public Involvement Plan

The project team also developed a separate intercept survey for transfer station customers, to gain focused feedback on Plan recommendations targeting self-haul transfer station customers.

In total, the project team developed 2 surveys.

See Appendix 7. Surveys.

### 4.1.5. Comment Cards

The team did not choose comment cards as a tool for this effort. The team did, however, hand out hundreds of “business” cards advertising the Plan website and asking for feedback.

### 4.1.6. Display Boards or Posters

The project team did not produce any display board or posters for use in the PIP outreach process.

### 4.1.7. Website/Online presence

The consultant team worked with SPU to develop a website at [www.seattle.gov/util/SolidWastePlan](http://www.seattle.gov/util/SolidWastePlan) to coordinate and gather survey input. The website provides convenient links to all the chapters of the Draft Solid Waste Management Plan, the online survey, email addresses, and related materials at SPU. By having a comprehensive website, the project team was able to ask stakeholders and SPU customers to publicize the website and deliver the PIP outreach activities to a wider audience.

With the increasing online activities and the use of social networking tools, the project team also developed materials and templates for email forwarding and Facebook postings. Through outreach activities with our targeted stakeholders, the project team asked willing participants to email survey materials to their lists and post updates on their Facebook pages.

### 4.1.8. Other Outreach Channels and Tactics

Besides working with the consultant team, SPU developed materials and conducted additional outreach activities:

- Talking with core team members and employees
- Meetings with internal stakeholders such as the inspector team
- Presence at other SPU forums such as for key business and industrial customers and multifamily recycling training
- Items in SPU’s electronic newsletters
- Items in SPU’s and other city department blogs
- Soliciting in-depth reviews by SPU staff who weren’t involved in developing the Plan

## 4.2. Outreach Activities

### 4.2.1 Outreach Meetings

From the outset, the project team decided that the most effective use of meetings was to piggyback on existing meetings of interested groups, especially for reaching historically under-represented populations.

The project team conducted 5 outreach meetings with community groups, and 5 other stakeholder groups between August and October 2011. These groups represent different interest areas and come from various geographical locations within the SPU service area. They include neighborhood and community organizations, a local area chamber, and a housing group. Most of the outreach meetings were arranged after initial contacts by the consultant team in August.

- Madrona Community Council
- Central Area Chamber of Commerce on September 12, 7pm at the 2100 Building
- Laurelhurst Community Club on September 12 at their board meeting
- Interbay Neighborhood Association on September 14 at their monthly meeting
- International District Housing Alliance on September 28
- Representatives from the local solid waste activism community
- Internal SPU work groups
- Other agencies (Sound Transit, Ecology)

The project team decided against staging any large, open invitation meetings, as an ineffective use of time and budget, and not useful for reaching a broad demographic perspective.

#### *4.2.2. Workshops*

The project team did not plan any workshops, for the same reasons as for not conducting open invitation meetings, above. While workshops can be useful for generating ideas, this outreach effort was to gain feedback on ideas already laid out in the draft Plan.

#### *4.2.3. Intercepts and Dialogues*

On October 1, October 4, October 8, October 11, and October 15, 2011, the consultant team worked with SPU to conduct intercept surveys at the SPU transfer stations. The survey teams conducted the survey in both English and Spanish, recording responses from a total of 99 transfer station users.

#### *4.2.4. Surveys*

##### **On-line Survey**

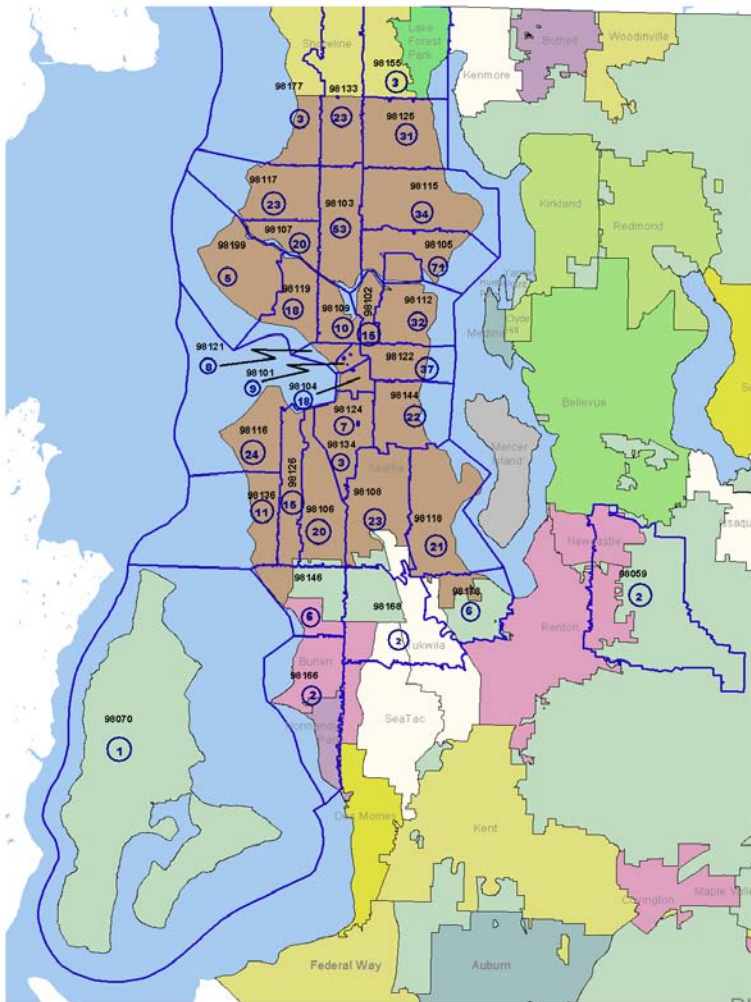
In total, the project team collected over 593 online survey responses. 256 of the participants submitted comments with their responses. The responses were collected between August 1 and October 9, 2011 with majority of responses coming in before September 15, 2011. Of the 593 responses, here are the key demographics:

**Appendix C: Public Involvement Plan**

**Group**

|                                                                                 |       |            |
|---------------------------------------------------------------------------------|-------|------------|
| Seattle resident of a single-family home (detached, or up to 4 units)           | 74.7% | 443        |
| Seattle resident of a multi-family home (condo or apartment of 5 or more units) | 11.0% | 65         |
| Manager of a multi-family residence in Seattle (of 5 units or more)             | 3.2%  | 19         |
| Seattle business owner/manager                                                  | 2.4%  | 14         |
| Construction and demolition (C&D) professional serving Seattle                  | 0.7%  | 4          |
| Other (please specify)                                                          | 8.1%  | 48         |
| <b><i>answered question</i></b>                                                 |       | <b>593</b> |
| <b><i>skipped question</i></b>                                                  |       | <b>0</b>   |

**Zip Codes**





**Age**

|                                 |       |            |
|---------------------------------|-------|------------|
| 18-34                           | 17.2% | 94         |
| 35-54                           | 48.1% | 262        |
| 55-64                           | 23.7% | 129        |
| 65 or older                     | 8.3%  | 45         |
| Decline to answer               | 2.8%  | 15         |
| <b><i>answered question</i></b> |       | <b>545</b> |
| <b><i>skipped question</i></b>  |       | <b>48</b>  |

**Gender**

|                                 |       |            |
|---------------------------------|-------|------------|
| Male                            | 33.3% | 179        |
| Female                          | 60.1% | 323        |
| Decline to answer               | 6.5%  | 35         |
| <b><i>answered question</i></b> |       | <b>537</b> |
| <b><i>skipped question</i></b>  |       | <b>56</b>  |

**Household Size**

|                                 |       |            |
|---------------------------------|-------|------------|
| 1                               | 16.0% | 86         |
| 2                               | 39.0% | 210        |
| 3                               | 18.0% | 97         |
| 4                               | 14.8% | 80         |
| 5 or over                       | 6.7%  | 36         |
| Decline to answer               | 5.6%  | 30         |
| <b><i>answered question</i></b> |       | <b>539</b> |
| <b><i>skipped question</i></b>  |       | <b>54</b>  |

**Household Income**

|                                 |       |            |
|---------------------------------|-------|------------|
| Under \$30,000                  | 3.4%  | 18         |
| \$30,000 – \$39,000             | 4.1%  | 22         |
| \$40,000 – \$49,000             | 5.8%  | 31         |
| \$50,000 - \$59,000             | 4.7%  | 25         |
| \$60,000 to \$75,000            | 12.8% | 69         |
| \$75,000 – \$100,000            | 18.8% | 101        |
| \$100,000 and over              | 27.9% | 150        |
| Decline to answer               | 22.5% | 121        |
| <b><i>answered question</i></b> |       | <b>537</b> |
| <b><i>skipped question</i></b>  |       | <b>56</b>  |

**Education**

|                                                 |       |            |
|-------------------------------------------------|-------|------------|
| Something less than high school graduate or GED | 0.4%  | 2          |
| High school graduate or GED                     | 2.1%  | 11         |
| Some college or technical school or AA degree   | 11.7% | 62         |
| 4 year college degree                           | 36.7% | 194        |
| Post graduate work or degree                    | 49.1% | 260        |
| <b><i>answered question</i></b>                 |       | <b>529</b> |
| <b><i>skipped question</i></b>                  |       | <b>64</b>  |

**Race/Ethnicity**

|                                 |       |            |
|---------------------------------|-------|------------|
| White                           | 81.1% | 438        |
| Black or African American       | 2.0%  | 11         |
| Chinese                         | 2.4%  | 13         |
| Filipino                        | 0.6%  | 3          |
| Vietnamese                      | 0.2%  | 1          |
| Don't know                      | 0.6%  | 3          |
| Decline to answer               | 9.3%  | 50         |
| Other (please specify)          | 6.1%  | 33         |
| <b><i>answered question</i></b> |       | <b>540</b> |
| <b><i>skipped question</i></b>  |       | <b>53</b>  |

**Hispanic, Latino, or Spanish Origin**

|                                 |       |            |
|---------------------------------|-------|------------|
| Yes                             | 3.2%  | 17         |
| No                              | 86.7% | 461        |
| Decline to answer               | 10.2% | 54         |
| <b><i>answered question</i></b> |       | <b>532</b> |
| <b><i>skipped question</i></b>  |       | <b>61</b>  |

**Average responses to recycling recommendations by white versus non-white race categories.**

Even though the survey was imperfectly random, the project team looked at nonwhite versus white reactions to select survey questions.

| Question                                                                                                                                                             | Scale                                                                   | Average Response |       |         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|------------------|-------|---------|
|                                                                                                                                                                      |                                                                         | Non-White        | White | Overall |
| Question 9<br>How satisfied are with Seattle Public Utilities' (SPU's) efforts to reduce waste and increase recycling and food and yard waste composting in Seattle? | 1 – Not at all satisfied<br>2<br>3<br>4<br>5<br>6<br>7 – Very Satisfied | 5.5              | 6.0   | 5.9     |
| Question 10<br>How satisfied are you with Seattle Public Utilities' garbage, recycling and food and yard waste pickup services in Seattle?                           | 1 – Not at all satisfied<br>2<br>3<br>4                                 | 5.5              | 5.9   | 5.8     |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                               |     |     |     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-----|-----|-----|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 5<br>6<br>7 – Very Satisfied                                                                                                  |     |     |     |
| Question 11<br>This question is about garbage service for single family households (up to 4-plexes). Right now the City’s Seattle Public Utilities picks up garbage on a weekly basis. They also pick up food and yard waste every Now that food scraps are allowed in the weekly yard and food waste service, the City’s seattle Public Utilities is considering changing garbage to an every other week service. If this change is made, how satisfied would you be? | 1 – Not at all satisfied<br>2 – Not very satisfied<br>3 – Somewhat satisfied<br>4 – Very satisfied<br>5 – Extremely satisfied | 2.3 | 2.8 | 2.7 |
| Question 13<br>Would you favor or oppose a plan that forbids food waste from being placed in the garbage container? Garbage containers with food and yard waste in them would not get picked up. Seattle already has similar rules about placing garbage in the recycling container and garbage in the food and yard waste container.                                                                                                                                  | 1 – Strongly oppose<br>2 – Oppose<br>3 – Favor<br>4 – Strongly favor                                                          | 2.4 | 2.7 | 2.7 |
| Question 15<br>Businesses are currently only required to recycle paper and cardboard. Would you favor or oppose a plan to require businesses to recycle more materials such as bottles and cans?                                                                                                                                                                                                                                                                       | 1 – Strongly oppose<br>2 – Oppose<br>3 – Favor<br>4 – Strongly favor                                                          | 3.4 | 3.6 | 3.6 |
| Question 17<br>Would you favor or oppose a plan to ask resident to put disposable diapers and pet waste into a separate collection container for pickup? The disposable diapers and pet waste would be composted using a process that kills bacteria and other pathogens.                                                                                                                                                                                              | 1 – Strongly oppose<br>2 – Oppose<br>3 – Favor<br>4 – Strongly favor                                                          | 3.1 | 3.3 | 3.3 |

**Transfer Station Intercept Survey**

SPU collected responses from 99 users of the city-owned transfer stations. Key demographics included:

**User Group**

|                                 |           |
|---------------------------------|-----------|
| <b>Business or Personal Use</b> |           |
| Personal                        | 64        |
| Business                        | 31        |
| Both                            | 2         |
| Both                            | 2         |
| <b>Grand Total</b>              | <b>99</b> |

**Age**

| <b>Age Group</b>   |           |
|--------------------|-----------|
| 18 to 34 years     | 14        |
| 35-54 years        | 57        |
| 55-64 years        | 19        |
| 65+ years          | 9         |
| <b>Grand Total</b> | <b>99</b> |

**Race/Ethnicity**

| <b>Race or Ethnicity</b>            |           |
|-------------------------------------|-----------|
| Asian                               | 3         |
| American Indian or Alaskan Native   | 2         |
| Black or African American           | 3         |
| Pacific Islander or Native Hawaiian | 1         |
| White/Caucasian                     | 75        |
| Decline to Answer                   | 3         |
| Other (see notes)                   | 10        |
| N/A                                 | 2         |
| <b>Grand Total</b>                  | <b>99</b> |

*4.2.5. Focus Groups*

Due to budget and time constraints, the project team did not organize and recruit for any focus groups for the PIP outreach process.

*4.2.6. Site Visits*

As there is no specific physical “site” for the recommendations in the Plan, SPU did not conduct any site visits. The community groups SPU met with, however, met at their usual meeting place.

*4.2.7. Other Initiatives*

As outlined in Chapter 2.2, the project team wanted to ensure the PIP outreach process communicated with no fewer than 100 diverse members and solicit no fewer than 80 responses from diverse stakeholders.

From the online survey, the project team collected responses from:

- 5.2% immigrants (28 responses)
- 1.7% with some language other than English (9 responses)
- 3.2% Latino origin (17 responses)
- 11.3% from other diverse communities (61 responses)
- Plus over 100 participants who wouldn’t say, skipped the demographic questions or declined to identify

Even though the transfer station intercept survey collected less demographic information, the intercept yielded:

- 19.2% diverse communities (19 responses)
- 16.2% Latino origin (16 responses)
- 8.1% primary language other than English (8 responses)

The project team did not collect demographic data on other outreach activities; however, feedback emails and community group meetings yielded comments from stakeholders that the project team considers diverse populations:

- Arab American Community Coalition
- Washington Low Income Housing Alliance
- Central Area Chamber of Commerce
- Madrona Community Council
- International District Housing Alliance

#### *4.2.8. Web and Social Media/Networking Activities*

Through the stakeholder outreach activities, the project team reached out and requested community contacts to share the draft Solid Waste Management Plan information with their networks.

Stakeholder groups such as Miller Park Neighborhood Association, Colman Neighborhood Association, Licton Springs Community Council and Seattle Immigrant and Refugee Board Liaison, Seattle Office for Civil Rights shared the PIP survey information and links with their email lists.

In addition, at least ten additional organizations posted blog stories and/or Facebook updates on their pages.

In all, about 19 groups, organizations, and other city departments posted a web page or Facebook item about the Plan, and/or forwarded Plan email messaging to their groups. This resulted in the effort reaching hundreds, perhaps thousands, more individuals than were reached by direct contact.

SPU also included items about the Plan in its two electronic newsletters, Apartment/Condo Conservation E-News, and the Curbwaste E-Newsletter. The apartment/condo newsletter goes out to about 250 recipients and Curbwaste to about 2,500 recipients. Newsletter recipients sign up to receive them from SPU.

See Appendix 8. Web and Social Media/Networking Activities.

## Chapter 5. PIP Closeout, Evaluation and Reporting

This PIP was highly effective in reaching beyond the minimum practice of general notices and general public meetings, especially given limited staff and budget. Targeted direct contact with stakeholders and leveraging modern tools of social media enabled SPU to gather feedback from a much larger scope of individuals than by doing “business as usual.” This chapter describes activities to wrap up this stage of public engagement and poise SPU for the public involvement aspects pertaining to the rest of the Solid Waste Plan adoption process.

### *5.1. Post Activity Documentation*

#### *5.1.1. Methodology for Analyzing Public Comments*

At the conclusion of the PIP outreach and stakeholder engagement process, the SPU project team compiled comments and survey results into two summary documents: one for Municipal Solid Waste (MSW) and the other for Construction and Demolition Debris (C&D).

Comments for the MSW summary document are sorted by the Plan’s chapters and sub-categories such as Recycling Goals, Planning Process, Measurement Data, Green Purchasing, Hazardous Waste, Product Stewardship, Waste Prevention, Recycling Recommendations, and Construction Demolition Debris.

Comments for the C&D summary document are sorted by theme categories such as Existing Policy, Basis for New Policy, Proposed New Programs, Proposed New Program Implementation, and Material Specific Disposal Ban Questions.

In addition to public and stakeholder comments, the Solid Waste Advisory Committee (SWAC) also reviewed the documents and gave SPU project team comments about the survey and other feedback results.

Notable changes to the Solid Waste Management Plan relating to public comments will be highlighted on SPU’s website with the two feedback summary documents for MSW and C&D.

#### *5.1.2. Documentation of and items collected from PIP Outreach Activities*

The project and consultant teams produced and collected the following documents during the PIP outreach process:

- Draft Solid Waste Management Plan
- A master stakeholder list
- A new web page and an online survey document at [www.seattle.gov/util/SolidWastePlan](http://www.seattle.gov/util/SolidWastePlan)
- Presentation materials for community groups to share information and gather feedback
- News release
- Template announcements and invitation emails
- Intercept survey document at transfer stations
- Web and social media/networking postings by community groups
- Summary of stakeholder outreach feedback
- Transfer station survey report
- Final summary comments and survey results reports

Most of these documents may be viewed in the appendices. As noted above, the MSW and C&D feedback summaries can be viewed by going to SPU's Solid Waste Plan web page at [www.seattle.gov/util/SolidWastePlan](http://www.seattle.gov/util/SolidWastePlan).

### *5.1.3. List of changes or modifications to master time-line for PIP stakeholder outreach activities*

#### *Change of Timeline*

The project team began this PIP in June of 2009 and completed the overview and approach (chapters one and two) at the end of 2009. The project team then created the initial stakeholder outreach list in chapter three in spring of 2010 and PIP outreach activities were initially scheduled for summer of 2010. The timeline for the PIP process, however, was extended to 2011 due to a change of timeline at SPU to create the Preview Draft of the Seattle Solid Waste Plan and the related outreach tools.

The project team regrouped and updated the stakeholder outreach list in spring of 2011 and added new community stakeholders. PIP outreach activities were rescheduled for summer of 2011 and the project team finally executed the PIP outreach and stakeholder engagement process between August and October of 2011.

Upon completion of the PIP outreach activities, the project team then spent the end of 2011 and January of 2012 to complete the summary reports and analysis of PIP results.

In short, the final PIP process was extended from the original 18 months timeline to 32 months in total (June of 2009 to February of 2012). Lastly, many of the outreach activities were conducted during August of 2011 when many stakeholders were on summer vacation.

#### *Staff Change*

While the extended PIP outreach process took over 32 months, the consultant team was faced with a staff change. And the SPU communications staff who was key to the PIP's concepts and initial development also left. All PIP documents were maintained so that new team members could easily continue.

#### *Limited Budget*

Some of the approaches and public notifications listed in Chapter 2, such as focus groups, various surveys, and advertisements were not conducted due to a limited budget. As a result, PIP outreach activities had to rely mostly on earned media, an online survey, and direct outreach activities conducted by the project team.

#### *Building and Editing the Stakeholder List*

Due to the long outreach timeline, the project team had to spend additional time to edit and contact stakeholder groups before conducting outreach activities. Between 2010 and summer 2011, many community organizations had changes in leadership and contact information. The project team had to duplicate some of the previous work done in 2010 and collect new details for the stakeholder list again in 2011.

#### *Imperfect Randomness*

The project team collected 593 responses from the online survey, 99 responses from transfer station users, and comments from at least 10 community organizations and groups, throughout the PIP process.

## Appendix C: Public Involvement Plan

However, with limited paid notifications and outreach approaches, there is a risk stakeholders who signed up and responded were self selecting and we may not have reached a truly random selection of individuals.

### *Language Barrier and Online Access*

The project team reached out and worked with all the targeted language and historically underserved populations during the PIP process. However, due to a limited budget, non-English and historically underserved community stakeholders may still have a more difficult time communicating and accessing the survey information online.

### **5.2. PIP Final Filings, Outcomes and Recommendations**

This final PIP report will be included in the Preliminary Draft of the Solid Waste Management Plan to be submitted by SPU to Washington State Department of Ecology in spring of 2012.

### **5.3. PIP Closeout and Reporting Plan**

Upon completion of the current PIP process and the public review elements, SPU will follow the steps below to continue the Solid Waste Management Plan Update process:

1. Complete revisions per Washington State Department of Ecology comments.
2. Complete State Environmental Protection Act (SEPA) requirements checklist.
3. Present Final Draft to City Council with resolution.
4. Present with City Council at a public hearing.
5. Submit Final Draft to Washington State Department of Ecology.

At minimum, SPU will make copies of the Preliminary Draft Plan available to Seattle's SWAC members and Public Health – Seattle and King County, as well as to the public on SPU's website. Hardcopies will be available at SPU's offices and at the Seattle Public Library. SPU will track any comments received for at least 30 days after the Preliminary Draft goes public. SPU will also meet with groups who want to learn more and discuss the plan. These activities will be conducted in coordination with the SEPA process as needed.

SPU will plan and conduct (as appropriate) additional public involvement processes because of significant changes stemming from the Plan adoption process, or direction from the Washington Department of Ecology.

SPU could also consider additional outreach opportunities and public engagement efforts during the remaining Solid Waste Management Plan update process. SPU could work with the project team to assess, organize and implement further outreach process and strategies. Potential outreach activities could include:

- Publicize Solid Waste Management Plan Update process timeline and develop an outreach strategy (from emails to regular web postings) to update PIP process participants.
- Engage stakeholders for additional comments upon Washington State Department of Ecology reviews.
- Develop ongoing dialogue with PIP process participants and potentially set up a citizens' panel to provide regular feedback and comments to SPU.



- Produce public outreach materials such as short video clips to showcase key comments from PIP process participants.
- Show PIP process participants the Final Draft before presenting to City Council.
- Invite PIP process participants to appear at City Council public hearing.

## PIP Appendix 1. Language Diversity

The breakdown of Tier One language groups is as follows:

### *Spanish*

According to the U.S. Census 2005-2007 American Community Survey, 5% of Seattle residents, or 26,807 people, speak Spanish at home. The highest concentration of Spanish speakers in Seattle lives in the South Park neighborhood where 30.27% of people speak Spanish in their homes. Out of the 115,143 residents who do not speak English, Spanish speakers account for approximately 23%. Based on this information, out of the 20-30% of non-English speakers, SPU recommends that no less than 20% and no more than 30% be included in this profile.

### *Cantonese and Mandarin, Vietnamese, Korean and Tagalog*

Ten percent of Seattle residents, or 55,432 people, speak an Asian or Pacific Island language at home. Out of the 115,143 residents who do not speak English, Asian or Pacific Island language speakers account for approximately 48%. However, there is no information on the breakdown of the language included in this group. Based on this information, SPU recommends that no less than 45% and no more than 50% of non-English speakers in the profile be Asian or Pacific Island language speakers.

Using information provided by the Department of Neighborhoods, it is possible to determine which areas of the city have the highest concentration of various Asian languages groups.

### *Somali*

There is no data available regarding Somali. The Dept. of Neighborhoods classifies all African languages in one group. Out of the 115,143 residents who do not speak English, African language speakers account for approximately 48%. SPU will determine the percentage non-English speakers in the profile be African language speakers in a latter date.

### *Racial and Ethnic Diversity (based on the 2000 Census)*

In the Seattle area, 146,655 people, or 26%, are identified as non-white. Since many non-whites speak English, we recommend that at least 20% and no more than 30% of the individuals in this profile are non-white and speak English. The racial and ethnic breakdown is as follows:

### *Asian*

Out of the non-white population in Seattle, 46%, or 76,170 people identified themselves as Asian. Another 1.9 percent indicated that they were of more than one race including Asian. The largest group of Asian descent in Seattle is Chinese followed by Filipino, Vietnamese, Japanese, Korean, and Asian Indian. Based on this information, SPU recommends that among the races represented in this model, no less than 42% and no more than 50% of Asians be included in this model.

### *Black or African American*

Blacks or African Americans comprise 26%, or 43,937 residents, of Seattle's non-white population. Another 1.4 percent of Seattle's populations selected black in combination with one or more other races. Based on this information, SPU recommends that no less than 22% and no more than 30% be included in this profile.

*Hispanic*

Hispanics comprise 21%, or 35,012 residents, of Seattle's non-white population. Hispanics can be of any race. The Census finds the majority of the city's Hispanics have origins in Mexico. The next largest group is of Puerto Rican origin followed by those of Cuban descent. Based on this information, SPU recommends that no less than 17% and no more than 25% be included in this profile.

*Native American or Alaskan Native*

Native Americans or Alaskan Natives comprise 3%, or 5,197 residents, of Seattle's non-white population. Another 1.1 percent of the Seattle population chose Native American or Alaska Native as well as at least one other race. Based on this information, SPU recommends that no less than 1% and no more than 5% be included in this profile.

*Native Hawaiian or other Pacific Islanders*

Native Hawaiian or other Pacific Islanders comprise 1%, or 2,334 residents, of Seattle's non-white population. Samoans formed the largest group followed by Native Hawaiians and Guamanian or Chamorro. Another 0.4 percent, nearly 5,000 people, chose Native Hawaiian or other Pacific Islander along with one or more other races. Based on this information, SPU recommends that no less than 1% and no more than 3% be included in this profile.

***Education***

Many residents of Seattle have attained very high levels of education. In 2005, 91.9% of persons over the age of 25 living in Seattle had completed high school. In addition, 52.7 of people had a Bachelor's degree or higher. SPU will determine the percentages of populations with a high school degree and a Bachelor's degree in a latter date. However, racial differences undercut these figures somewhat. Among non-whites, 37% of Asian and Pacific Islanders have at least a Bachelor's degree, 26% of Hispanics, and 20% of Blacks and African Americans. Therefore, within each racial and ethnic group, we recommend the following be incorporated into the profile:

- Among Asians, at least 30% and no more than 40% have a Bachelor's degree;
- Among Hispanics, at least 20% and no more than 30% have a Bachelor's degree; and
- Among Blacks and African Americans, at least 15% and or more than 25% have at least a Bachelor's degree.

***Economic Status***

In 2008, the median family income for metropolitan Seattle (which includes Seattle, Bellevue, and Everett) was \$81,403. Therefore, anyone earning less than this amount can be considered underserved. SPU will determine the percentage of individuals representing populations earning less than the median income in a latter date.

***Geography/Neighborhoods***

SPU will break the City up into Northwest, Northeast, West, East, Southwest, and Southeast regions. This follows the Department of Neighborhoods breakdown (<http://www.seattle.gov/neighborhoods/net/>). When selecting stakeholders from community and neighborhood organizations, we will strive for even representation across these regions.

## PIP Appendix 2. SPU News Release on August 10, 2011

NEWS ADVISORY

FOR IMMEDIATE RELEASE:

FOR MORE INFORMATION CONTACT: SPU Customer Service (206) 684-3000

### **Survey asks how to create a cleaner and greener Emerald City Seattle Public Utilities seeks input about best ways to reach 70 percent recycling**

SEATTLE – Seattle Public Utilities (SPU) wants to hear from residents and businesses about waste reduction, recycling, and other solid waste services. The 2011 draft revision of Seattle’s Solid Waste Management Plan is available on SPU’s website.

“Our ambitious solid waste goals are another example of the high expectations that the people of Seattle rightly have for our public utilities. Good planning and dedicated citizens are how Seattle achieves these goals,” said Seattle Mayor Mike McGinn.

The Solid Waste Management Plan updates the City of Seattle’s programs to prevent waste, increase recycling and composting, and improve services. It describes the roadmap that will guide Seattle to its goal of diverting 70 percent of all municipal solid waste away from the landfill. The current timeline to achieve this rate is 2025, but the draft plan proposes moving the time frame up to 2022.

“This revised plan further strengthens the key concepts of zero waste, waste prevention, sustainability, and product stewardship – which were initially developed over a decade ago by a wide group of stakeholders,” McGinn added. “The public comment process is how we work together, as a city, to figure out how to get there.”

SPU is providing a variety of ways for people to provide input: an online survey; a dedicated e-mail address at [SolidWastePlan@seattle.gov](mailto:SolidWastePlan@seattle.gov); and working with community groups to share information and gather feedback.

“Citizen action is what has spurred Seattle to become a national leader in recycling and composting. I’m confident that the input provided by the people of Seattle will further improve a plan that continues to guide the City well,” said City Councilmember Mike O’Brien, Chair of the Seattle Public Utilities and Neighborhoods Committee.

Learn more about Seattle Public Utilities. Follow SPU on Twitter.

In addition to providing a reliable water supply to more than 1.3 million customers in the Seattle metropolitan area, SPU provides essential sewer, drainage, solid waste and engineering services that safeguard public health, maintain the City’s infrastructure and protect, conserve and enhance the region’s environmental resources.

- SPU-

# PIP Appendix 3. SPU Website

[www.seattle.gov/util/SolidWastePlan](http://www.seattle.gov/util/SolidWastePlan)



## PIP Appendix 4. Master Stakeholder List

| Organization Name                                        |
|----------------------------------------------------------|
| 1111 Third (CB Richard Ellis)                            |
| 505 Union Station (CB Richard Ellis)                     |
| Additional Seattle Orgs of Potential Interest            |
| Administration for Children & Families Region 10         |
| Admiral Neighborhood Association                         |
| African American Reach and Teach Ministry                |
| Alcoa Primary Metals, Intalco Works                      |
| Alexandria Real Estate Inc                               |
| Alexis Hotel                                             |
| Alki Community Council                                   |
| All on Gabriella's C&D list                              |
| All our licensed recyclers, such as Total Reclaim        |
| All Wood Recycling                                       |
| Alley24 East                                             |
| Alliance for a Just Society                              |
| Allied                                                   |
| Allied Waste                                             |
| American President Lines                                 |
| American Roofing Recyclers                               |
| American Seafoods Inc                                    |
| Amgen Inc                                                |
| Amtrak                                                   |
| Arab American Community Coalition                        |
| Arts Corps                                               |
| Ashforth Pacific, Inc                                    |
| Ashgrove Cement                                          |
| Asian Counseling and Referral Service                    |
| Asian Pacific Islander Women and Family Safety Center    |
| Associated General Contractors                           |
| Association of General Contractors (AGC)                 |
| Atlantic Street Center-New Holly Youth and Family Center |
| Baby Diaper Service                                      |
| Ballard Chamber of Commerce                              |
| Beacon Alliance of Neighbors                             |
| Belltown Business Association                            |
| Belltown Community Council                               |
| Benaroya Hall                                            |
| Bental LLC                                               |
| Biosolids folks                                          |
| Bobby Wolford Trucking and Demolition                    |
| Boeing Company                                           |
| Boeing IDS                                               |
| BOMA                                                     |
| Boys and Girls Club                                      |
| Bristol-Myers Squibb Company                             |

|                                                       |
|-------------------------------------------------------|
| Broadmoor Country Club                                |
| Broadview Community Council                           |
| Burlington Northern Santa Fe Railroad                 |
| Bush, Roed and Hitchings Inc.                         |
| CAC Real Estate                                       |
| CalPortland                                           |
| Capitol Hill Community Council                        |
| Capitol Hill Housing                                  |
| Carwash Enterprise (Brown Bear)                       |
| Casa Latina                                           |
| Cascade Land Conservancy                              |
| Cascade Water Alliance                                |
| Cascadia Consulting                                   |
| Catholic Community Services of Western WA             |
| CB Richard Ellis                                      |
| CB Richard Ellis Global Corporate Services            |
| CBRE                                                  |
| CDL Recycle                                           |
| Cedar Grove Composting Co.                            |
| Center for Environmental Law & Policy                 |
| Center for Livable Communities                        |
| Central (Seattle) Area Chamber of Commerce            |
| Central Pget Sund Rgonal Trnst                        |
| Certainteed Gypsum                                    |
| Chamber of Commerce Sustainability Committee          |
| Charlie's Produce                                     |
| Childrens Hospital                                    |
| Chinatown Business Improvement Area                   |
| Chinese Information Service Center                    |
| CleanScapes                                           |
| Climate Solutions                                     |
| Clipper Seafoods Ltd                                  |
| Clise Properties                                      |
| Colman Neighborhood Association                       |
| Columbia City Business Association                    |
| Construction Materials Recycling Association          |
| Construction Waste Management, Inc.                   |
| Cool Moms                                             |
| Council for Children and Families                     |
| CP Management                                         |
| Cray Inc                                              |
| CRISTA Ministeries                                    |
| Crista Ministries                                     |
| Crown Hill Neighborhood Association                   |
| Crowne Plaza Seattle-Downtown                         |
| Darigold Inc                                          |
| Deloitte & Touche LLP                                 |
| Delridge Neighborhoods Development Association (DNDA) |

## Appendix C: Public Involvement Plan

|                                                                             |
|-----------------------------------------------------------------------------|
| Dendreon Corporation                                                        |
| Department of Planning and Development: Green Building Team                 |
| Department of Social and Human Services -Community Services Offices-Rainier |
| Dept. of Neighborhoods                                                      |
| Dhl Danzas Air & Ocean                                                      |
| Downtown Nordstrom                                                          |
| Downtown Seattle Association                                                |
| Drywall Recycling Systems                                                   |
| Dyna Care Lab Northwest LLC                                                 |
| Eagle Marine Services Ltd                                                   |
| Earth Corps                                                                 |
| Earth Justice                                                               |
| Earth Ministry                                                              |
| Earthwise                                                                   |
| East African Alliance                                                       |
| East African Community Services                                             |
| Eastlake Community Council                                                  |
| Edgewater Inn                                                               |
| El Centro de la Raza                                                        |
| Elliott Bay Marina                                                          |
| Emerald Services Inc                                                        |
| EMP/SFM                                                                     |
| Enterprise Seattle                                                          |
| Environmental Coalition of South Seattle                                    |
| Environmental Justice Network in Action                                     |
| Environmental Outreach and Stewardship Alliance                             |
| Ethiopian Community Mutual                                                  |
| Expeditors Intl Wash Inc                                                    |
| Facing the Future: People & the Planet                                      |
| Fairmont Olympic Hotel                                                      |
| Fauntleroy Community Association                                            |
| Federal Reserve Bank of San Francisco                                       |
| Federated Dept Stores Inc                                                   |
| Filipino Community Center                                                   |
| Food & Beverage groups                                                      |
| Foss Home & Village                                                         |
| Foss Maritime                                                               |
| Four Seasons Hotel                                                          |
| Franz Bakers                                                                |
| Fred Hutchinson Cancer Res Ctr                                              |
| Fred Meyer                                                                  |
| Fred Meyer Stores Inc                                                       |
| Fremont Chamber of Commerce                                                 |
| Fremont Neighborhood Council                                                |
| Friends of the Cedar River Watershed                                        |
| Full Life Adult Day Care                                                    |
| Futurewise                                                                  |



|                                                 |
|-------------------------------------------------|
| FX McRory's                                     |
| General Services Administration                 |
| Georgetown Community Council                    |
| GIRVIN Creative Marketing                       |
| Golden Alaska Seafoods Inc                      |
| Gordon Biersch Brewing Company                  |
| Grand Hyatt Seattle                             |
| Grayhawk Construction                           |
| Greater Duwamish Council                        |
| Greater Glory Church of God                     |
| Greater Madison Valley Community Council        |
| Greater Seattle Chamber of Commerce             |
| Greenwood Community Council                     |
| Greenwood-Phinney (Seattle) Chamber of Commerce |
| Group Health Co-Operative                       |
| GSA Federal Courthouse (new)                    |
| Haller Lake Community Club                      |
| Hanjin Shipping Company Ltd.                    |
| Harborview Medical Center                       |
| Harman Management (Yum Yum Foods)               |
| Hawthorne Hills Community Council               |
| Helping Link                                    |
| High Point Neighborhood Association             |
| Highland Park Action Committee                  |
| Highland Park Improvement Club                  |
| Hillman City Neighborhood Alliance              |
| Hilton Hotel                                    |
| Hines, Inc.                                     |
| Hoffman Construction Company of Washington      |
| Home Builders Assoc.                            |
| Horizon House                                   |
| Hospital Central Service                        |
| Hotel 1000                                      |
| Hotel Andra                                     |
| Hoteliers                                       |
| Housing Auth of The Cy Seattle                  |
| Housing Development Consortium                  |
| Housing Resources Group (HRG)                   |
| Inn At The Market                               |
| Interbay Neighborhood Association               |
| International District Housing Alliance         |
| Jackson Place Community Council                 |
| JC Penney Corporation Inc                       |
| Jewish Federation of Greater Seattle            |
| JSH Properties (Aurora Square)                  |
| Judkins Park Community Council                  |
| Junior League of Seattle                        |
| K&L Gates LLP                                   |

## Appendix C: Public Involvement Plan

|                                                    |
|----------------------------------------------------|
| K2 Sports                                          |
| KC Recycling Coordinators                          |
| Keller CMS, Inc.                                   |
| Kendall Trucking                                   |
| King County                                        |
| King County DNR Director Office                    |
| King County Health Dept                            |
| King County Industrial Waste Program               |
| King County International Airport                  |
| King County Solid Waste Division                   |
| King County Transit                                |
| Korean Women's Association                         |
| Korry Electronics Co                               |
| Lafarge Corp                                       |
| Lafarge North America                              |
| Lake Union Drydock Company                         |
| Lakewood / Seward Park Community Club              |
| Laurelhurst Community Club                         |
| League of Education Voters                         |
| League of Women Voters                             |
| Lease Crutcher Lewis                               |
| Licton Springs Community Council                   |
| Local Hazardous Waste Management Program (LHWMP)   |
| Low Income Housing Institute (LIHI)                |
| MacDonald Miller Facility Solutions                |
| MacMillan-Piper                                    |
| Madrona Community Council                          |
| Magnolia Community Club                            |
| Magnolia Neighborhood Planning Council             |
| Manufacturing Industrial Council                   |
| Maple Leaf Community Council                       |
| Marpac Construction LLC                            |
| Martin Selig Real Estate                           |
| Martin Smith Real Estate Services                  |
| Master Builders                                    |
| Master Builders Assoc of King & Snohomish Cty      |
| Mayflower Park Hotel Inc                           |
| McDonalds-MCD Corporation                          |
| Meadowbrook Community Council                      |
| Metropolitan Park Buildings (Wright Runstad & Co.) |
| Metropolitan Tower                                 |
| Miller Park Neighborhood Association               |
| Montlake Community Club                            |
| Morgan Community Association                       |
| Mount Baker Community Club                         |
| Mt. Baker Housing Association                      |
| Muni League                                        |
| N & S Rebuild Stakeholder Grps                     |

|                                              |
|----------------------------------------------|
| National Marine Fisheries Svc                |
| National Marine Fisheries Svc                |
| NCAST Programs                               |
| Neighborhood House                           |
| New Futures                                  |
| New West Gypsum                              |
| Nickels Bros House Moving                    |
| Nitze-Stagen                                 |
| NOAA                                         |
| NOAA National Marine Fisheries Svc.          |
| NOAA (NOAA Montlake) (NOAA Sandpoint)        |
| Noel House                                   |
| Nordstrom                                    |
| North Beacon Hill Council                    |
| North Delridge Neighborhood Council          |
| North Seattle Community College              |
| North Seattle Rotary                         |
| Northgate Mall                               |
| Northland Services Marine Transportation     |
| Northwest Energy Efficiency Council          |
| Northwest Environmental Education Council    |
| Northwest Hospital                           |
| Northwest Kidney Centers                     |
| Northwest Product Stewardship Council        |
| Northwest Seafood Processors                 |
| NUCOR                                        |
| Nucor                                        |
| Nucor Steel                                  |
| Nuprecon                                     |
| NW EcoBuilding Guild                         |
| Office of Economic Development (OED)         |
| Office of Sustainability & Environment (OSE) |
| Othello Neighborhood Association             |
| Pacific Construction Systems                 |
| Pacific Medical Center Clinic                |
| Pacific Science Center                       |
| Pacific Topsoils                             |
| Packaging groups                             |
| Parent Trust for Washington Children         |
| Park Place Bldg (Wright Runstad and Co)      |
| PEMCO                                        |
| People for Puget Sound                       |
| Pepsi Bottling Group                         |
| Pepsi-Cola Metro Btlg Co Inc                 |
| Peter Pan Seafoods Inc                       |
| Phinney Neighborhood Association             |
| Pierce County solid waste                    |
| Pigeon Point Neighborhood Council            |

**Appendix C: Public Involvement Plan**

|                                                          |
|----------------------------------------------------------|
| Pinehurst Community Council                              |
| Pioneer Square. Community Association                    |
| Plymouth Housing Group (PHG)                             |
| Polyclinic A Professional                                |
| Pomegranate Center                                       |
| Port of Seattle                                          |
| Ports America T-46                                       |
| PPRC - Pollution Prevention Resource Center              |
| Processors (e.g. metal) who aren't on our recyclers list |
| Puget Sound Blood Ctr Program                            |
| Pyramid Breweries Inc                                    |
| Queen Anne Chamber of Commerce                           |
| Queen Anne Community Council                             |
| Queen Anne Plaza Inc                                     |
| Quest Dgnstics Clinical Labs De                          |
| Qwest Field                                              |
| R.W. Rhine Inc.                                          |
| RAFN Company                                             |
| Rainier Valley Chamber of Commerce                       |
| Rainier Vista (Seattle Housing Authority)                |
| Rainier Wood Recyclers                                   |
| Ranier Vista (Seattle Housing Authority)                 |
| Ravenna-Bryant Community Association                     |
| Recovery 1                                               |
| Recreational Equipment Inc                               |
| Refugee Federation Services Center                       |
| Regence Building                                         |
| REI (current)                                            |
| Renton Concrete Recyclers                                |
| Resource Recovery Services                               |
| Restaurant Association                                   |
| Riverview Neighborhood Council                           |
| Roosevelt Neighborhood Association                       |
| Roosevelt Neighbors' Alliance                            |
| Rosetta Inpharmatics LLC                                 |
| Safeco Plaza (1001 Fourth Avenue)                        |
| Safeway                                                  |
| Saint Gobain Container LLC                               |
| Salaam Urban Village Association                         |
| Samuel & Company, Inc.                                   |
| SBRI                                                     |
| Schwartz Brothers Restaurants                            |
| Sea Mar Community Health Center                          |
| SeaFreeze                                                |
| SeaTac Airport, Aviation Facilities & Infrastructure     |
| Seattle Aquarium                                         |
| Seattle Art Museum                                       |
| Seattle BioMed                                           |

|                                                                                 |
|---------------------------------------------------------------------------------|
| Seattle Biomedical Res Inst                                                     |
| Seattle Cancer Care Alliance                                                    |
| Seattle Center                                                                  |
| Seattle Center - Redevelopment                                                  |
| Seattle Central Community College                                               |
| Seattle Children's Hospital                                                     |
| Seattle Chinatown International District Preservation and Development Authority |
| Seattle City Light                                                              |
| Seattle Community College, South                                                |
| Seattle Community Colleges                                                      |
| Seattle Department of Transportation                                            |
| Seattle Finance & Admin                                                         |
| Seattle Fleets & Facilities                                                     |
| Seattle Hilton Hotel                                                            |
| Seattle Housing Authority (SHA)                                                 |
| Seattle Iron & Metals Corp                                                      |
| Seattle Mariners                                                                |
| Seattle Pacific University                                                      |
| Seattle Parks and Recreation                                                    |
| Seattle Parks Department                                                        |
| Seattle Public Library                                                          |
| Seattle Public Schools                                                          |
| Seattle School Board                                                            |
| Seattle School District                                                         |
| Seattle Seahawks                                                                |
| Seattle Skyline Rotary                                                          |
| Seattle Steam                                                                   |
| Seattle Tennis Club                                                             |
| Seattle Tilth                                                                   |
| Seattle University                                                              |
| Seattle Works                                                                   |
| Second Use Building Materials                                                   |
| Sellen Construction Co.                                                         |
| Seward Park Environmental & Audubon Center                                      |
| Sheraton Hotel                                                                  |
| Shoreline Community College                                                     |
| Shoreline School                                                                |
| Sierra Club - Cascade Chapter                                                   |
| Sightline Institute                                                             |
| Skanska                                                                         |
| SKCDPH (health dept) – as required by law                                       |
| Snohomish County solid waste                                                    |
| SODO Business Association                                                       |
| Solid Ground                                                                    |
| Somali Community Services of Seattle                                            |
| Sound Transit                                                                   |
| South Lake Union Chamber of Commerce                                            |

## Appendix C: Public Involvement Plan

|                                             |
|---------------------------------------------|
| South Park Business Association             |
| South Park Neighborhood Association         |
| South Seattle Community College             |
| Space Needle Corporation                    |
| Space Needle Corporation                    |
| Spaghetti Factory                           |
| SPU EA Meeting                              |
| Ssa International Inc                       |
| Starbucks Coffee Co                         |
| Stevedoring Services of America             |
| Stewardship Partners                        |
| Stouffer Madison Hotel                      |
| Sunset Hill Community Association [Ballard] |
| Supreme Alaska Seafoods Inc                 |
| Sustainable Ballard                         |
| Sustainable Downtown Seattle                |
| Sustainable Greenwood-Phinney               |
| Sustainable Queen Anne                      |
| Sustainable Seattle                         |
| Sustainable South Seattle                   |
| Sustainable West Seattle                    |
| Swedish Medical Center - Providence Campus  |
| Swedish Medical Center-First Hill           |
| Swedish Medical Center-Providence           |
| Swedish Health Services                     |
| Swedish Hospital                            |
| Swedish Medical Center                      |
| Swedish Medical Center - Cherry Hill        |
| Swedish Medical Center- Ballard             |
| Swedish Medical Center- Ballard             |
| Swedish Medical Center- Providence Campus   |
| T&T Recovery                                |
| The Polyclinic                              |
| The RE Store                                |
| The Westin Building                         |
| The Westin, Seattle                         |
| Todd Pacific Shipyards                      |
| Total Terminals International Inc. T-46     |
| Touchstone                                  |
| Trammell Crow Company                       |
| TRF Pacific Inc                             |
| Tyson Foods Inc                             |
| U S Army                                    |
| U Village Imp Ltd Partnership               |
| Unico Properties                            |
| Unico Properties, Inc                       |
| Union Pacific Railroad                      |
| United Indians of All Tribes Foundation     |

|                                                          |
|----------------------------------------------------------|
| United States Dept Commerce                              |
| United States Postal Service                             |
| United States Postal Services                            |
| University (Greater) Chamber of Commerce                 |
| University Book Store Inc                                |
| University Heights Center                                |
| University Mazda                                         |
| University of WA-Consolidated Laundry                    |
| University of WA-Physical Plant Bldg. Rm 104             |
| University of Washington                                 |
| University of Washington                                 |
| University of Washington Educational Out- reach Program  |
| University of Washington, Facilities Services            |
| University Park Community Club                           |
| University Village IMP LTD Partnership                   |
| Urban League                                             |
| US Army Corps of Engineers                               |
| US Coast Guard                                           |
| US Geological Survey                                     |
| UW School of Medicine                                    |
| V A Medical Center                                       |
| VA Puget Sound Health Care System                        |
| Veterans Affairs Puget Sound Health Care System          |
| Vintage Park Hotel                                       |
| Virginia Mason Medical Center                            |
| Vulcan Finance                                           |
| Vulcan Inc.                                              |
| Wallace Property Management                              |
| Wallingford Chamber of Commerce                          |
| Wallingford Community Senior Center                      |
| Wallingford Neighborhood Community Council               |
| Walsh Construction                                       |
| Wards Cove Packing Company                               |
| Wash Athletic Club                                       |
| Wash Athletic Club                                       |
| Washington Citizens for Resource Conservation            |
| Washington Environmental Council                         |
| Washington Low Income Housing Alliance                   |
| Washington Organic Recycling Council                     |
| Washington Refuse & Recycling Assoc                      |
| Washington State Department of Transportation            |
| Washington State Hispanic Chamber of Commerce (Seattle)  |
| Washington State Recycling Association                   |
| Washington State Vietnamese American Chamber of Commerce |
| Washington Toxics Coalition                              |
| Washington Wildlife and Recreation Coalition             |
| Waste Management                                         |
| Waste Management - Eastmont                              |

## Appendix C: Public Involvement Plan

|                                                |
|------------------------------------------------|
| Waste Management Northwest                     |
| Water District #125                            |
| Waterfront Seafood Grill                       |
| Wedgwood Community Council                     |
| Wells Fargo Center                             |
| West Seattle Chamber of Commerce               |
| West Seattle Junction Association              |
| Western Towboat Company                        |
| Westin Building                                |
| Westin Building (Clise Properties)             |
| Westlake Associates                            |
| Westlake Center Assn                           |
| Westwood Neighborhood Council                  |
| White Center Chamber of Commerce               |
| White Center Community Development Association |
| Wild Fish Conservancy Northwest                |
| Women Business Owners                          |
| Women's Business Exchange                      |
| Woodland Park Zoo                              |
| Woodworth and Co                               |
| Wright Runstad & Company                       |
| WUTC – as required by law                      |
| Yes-Presentation or Brochures                  |
| YMCA                                           |
| Youngstown Cultural Arts Center                |
| Youth in Focus                                 |
| YWCA                                           |
| Zero Waste Seattle                             |
| Zymogenetics Inc                               |



## PIP Appendix 5. Outreach Phone Script

The following phone script was used by the consultant team to contact stakeholders.

- Hi, is this \_\_\_?
- Hi, I'm \_\_\_ and I'm calling from The Connections Group on behalf of Seattle Public Utilities.
- We know things are busy over there, so I'll try to whiz through this: Right now SPU is updating Seattle's long-term solid waste plan and they're seeking consumer input on their proposed recommendations... from setting recycle goals to various initiatives to reduce waste.
- Since you are a respected organization in the \_\_\_\_\_ community, we'd love to get input from your organization to help represent the voice of \_\_\_\_\_.... Would you be willing to share your views with us? [on recommended changes to Waste Management in Seattle]
- Great! Could I get the best email address to reach you, and then... [*if no, ask if they'd be willing to fill out a five-minute survey then*]
- [*“What does it entail?”*] It's nothing big – all it involves is reading a document on the proposed recommendations, answering a few questions, and filling out a five-minute survey.
- Thanks! I'll send you the summary of proposed recommendations and the survey link this afternoon. Also, we're trying to reach out to individual communities as much as possible; would you be willing to put a blurb for the SPU survey on your Facebook or in your newsletter?
- And finally, we're hoping to get several ambassadors from each community. Do you have any suggestions on who else we could contact, or would you be willing to share our email with two employees/colleagues/board-members and ask if they'll fill it out too?
- [*If they are super interested*] We could check with SPU to see if we could get a presentation held at your next community meeting? Would that be something that interests you?
- Thanks for your help and participation!

## PIP Appendix 6. Outreach Email

The following email was used by the consultant team to contact stakeholders after initial phone contacts.

Hi \_\_\_\_\_,

Great speaking with you earlier today and we appreciate your help in reaching out your community contacts for the SPU's long-term solid waste plan update.

At the end of this message, we've pasted the blurb for your blog.

Again, we're seeking to get three members from [org name] to give a voice in our outreach work, so if you could share this email with two colleagues who might be interested in these issues or would well represent the organization, that would be much appreciated.

Below are the instructions on giving your feedback. Your thoughts are going to help guide SPU for the next ten years! Thanks again for your time!

-----  
For the seventh straight year, Seattle's recycling rate has risen, hitting an all-time high of 53.7 percent overall and 70.3 percent for single households. The national recycling average is 32.1 percent. While each city calculates its diversion rates differently, Seattle is considered to be among the national leaders in municipal recycling, especially after the great strides we made in 2010.

Now Seattle Public Utilities (SPU) is looking for your input to inform our decision-making as we update our long-term waste plan. We'd like to know how you, your members, your business, or the people/businesses represented by your organization would be affected by the recommendations in the plan.

We ask that you read a section of the draft update and answer a few questions. The draft is available at [www.seattle.gov/util/About\\_SPU/Garbage\\_System/Plans/Solid\\_Waste\\_Comprehensive\\_Plan/index.asp](http://www.seattle.gov/util/About_SPU/Garbage_System/Plans/Solid_Waste_Comprehensive_Plan/index.asp)

Feel free to choose the section that most interests you:

- The ***Executive Summary***, which gives an overview of the entire plan and summarizes all recommendations in the plan.
- ***A Breakdown of Recycling Recommendations***, attached as a Word Doc, which shows when these recommendations would be implemented in the different sectors of single-family homes, apartments and condos (multi-family), and business (commercial).
- Chapters that contains recommendations:
  - ***Chapter 3 Waste Prevention***, which covers strategies to prevent waste from being created. It also talks about product stewardship, which gets producers and retailers more involved in managing their products at end of life.

- **Chapter 4 Seattle's MSW System**, which goes into more depth about the recycling recommendations. It also talks about the steps in waste management, from collection, through transfer, to processing and landfill disposal.
- **Chapter 5 Other Solid Waste Streams**, which contains recommendations to increase construction and demolition debris, as well as for graffiti, illegal dumping, litter, and community cleanup.
- **Chapter 6 Administration and Financing the Plan** discusses solid waste education, as well as the financial impacts of the recycling recommendations.

After reading the section(s), please send a quick note to us at [spusurvey@connectionsgroup.org](mailto:spusurvey@connectionsgroup.org) [just reply to this email], specifying which section(s) you read and include any comments you have on the recommendations, the overall direction of the plan, the recycling goals, or anything else. We will make sure your comments are sent to SPU.

Here are a few sample questions to jumpstart your thinking.

1. Do you support the draft plan's recycling goals to reach 60% by 2015, and the longer-term goal of 70% by 2022? Do you think Seattle should be more aggressive about recycling, or increase recycling more slowly?
2. SPU's waste prevention programs include product stewardship activities, which seek increased producer responsibility for wastes. Do you agree producers and retailers should do more to reduce toxics in their products, and make their products more recyclable? Do you think they should pay for managing products at their end of life?
3. The recycling recommendations would be phased in over a number of years. Do you agree with the order and timing of the changes? Do you think customers will have time to get used to a change before the next one comes? Should the timing be more aggressive?
4. Do you support SPU inspectors increasing how much they look in garbage containers for materials that aren't allowed there?
5. Do you think the changes will go smoothly? Are there perhaps some problems SPU planners should take into account before starting a new program?

Lastly, it's also important you fill out a five-minute survey at the end when you have a moment.

<https://www.surveymonkey.com/s/spusolidwasteplan>

Thanks very much for your time and we appreciate your feedback.

**BLURB**

Have your voice heard as Seattle Public Utilities updates Seattle's long-term solid waste plan. SPU is looking for customer inputs on the draft plan which contains many recommendations. Read the plan at [www.seattle.gov/util/About\\_SPU/Garbage\\_System/Plans/Solid\\_Waste\\_Comprehensive\\_Plan/index.asp](http://www.seattle.gov/util/About_SPU/Garbage_System/Plans/Solid_Waste_Comprehensive_Plan/index.asp)

Tell SPU what you think and take a five-minute survey at [www.surveymonkey.com/s/spusolidwasteplan](http://www.surveymonkey.com/s/spusolidwasteplan).

## Appendix C: Public Involvement Plan

Let's make sure [your community] is well represented in SPU's outreach process!

# PIP Appendix 7. Surveys

## Online Survey

Seattle Public Utilities (SPU) requests customer input on plans to reduce waste and improve recycling, food and yard waste composting, and other solid waste services. This survey should take about 15 minutes. SPU will post a summary of the results on its website, [www.seattle.gov/util/solidwasteplan](http://www.seattle.gov/util/solidwasteplan).

Thank you for informing the decisions that will help SPU reach Seattle's goals to reduce waste, increase recycling, and keep future costs as low as possible.

**\*Which group best describes your point of view for this survey? (Choose one)**

- Seattle resident of a single-family home (detached, or up to 4 units)
- Seattle resident of a multi-family home (condo or apartment of 5 or more units)
- Manager of a multi-family residence in Seattle (of 5 units or more)
- Seattle business owner/manager
- Construction and demolition (C&D) professional serving Seattle
- Other (please specify)

**What type of business do you own or manage? (Select from the drop-down menu)**

If you selected other, please describe in box below

**Which of these best describes your work as a construction and demolition (C&D) professional?**

- Construction contractor
- Third party hauler or C&D waste and/or recycling collector
- C&D waste and/or recycling facility operator
- Other (please specify)

**\*How often do you recycle the following materials at your job site?**

|                                      | Always                | Very often            | Sometimes             | Rarely                | Never                 | Don't know            |
|--------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Asphalt paving, bricks, and concrete | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Metal                                | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Cardboard                            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Plastic film wrap                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Carpet                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Clean wood                           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| New gypsum scrap                     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Tear-off asphalt shingles            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

**\*For each material listed below, would you favor or oppose a plan to stop the material from disposal in the garbage that goes into the landfill?**

|                                      | Strongly favor        | Favor                 | Oppose                | Strongly oppose       | Not sure/No opinion   |
|--------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Asphalt paving, bricks, and concrete | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Metal                                | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Cardboard                            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Plastic film wrap                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Carpet                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Clean wood                           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| New gypsum scrap                     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Tear-off asphalt shingles            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

**If you were required to sort materials for recycling at your job site and have them delivered to a recycling facility, do you think your costs would decrease, increase, or stay the same?**

Decrease  
 Increase  
 Stay the same  
 Don't know/No opinion

**Seattle Public Utilities (SPU) is proposing to continue support for construction and demolition contractors to increase recycling. The support includes education about construction and demolition recycling options, expanding support for salvage activities, and developing a program that measures how well processing facilities are recycling. How important is it to you that SPU undertakes the following activities?**

|                                                  | 1 - Not at all important | 2                     | 3                     | 4                     | 5                     | 6                     | 7 - Very important    | Don't know/No opinion |
|--------------------------------------------------|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Education about salvage                          | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Education about deconstruction                   | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Education about job site recycling               | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Education about recycling facilities             | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Checking and publishing facility recycling rates | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Market development for recyclable materials      | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

**What is your home or business zip code for the home or business you're using as your point of view for this survey? (Enter 5-digit zip code)**

ZIP:

**How satisfied are you with Seattle Public Utilities' (SPU's) efforts to reduce waste and increase recycling and food and yard waste composting in Seattle?**

|  | 1 - Not at all satisfied | 2                     | 3                     | 4                     | 5                     | 6                     | 7 - Very satisfied    | Don't know            |
|--|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|  | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

**How satisfied are you with Seattle Public Utilities' garbage, recycling, and food and yard waste pickup services in Seattle?**

|  | 1 - Not at all satisfied | 2                     | 3                     | 4                     | 5                     | 6                     | 7 - Very satisfied    | Don't know            |
|--|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|  | <input type="radio"/>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

**\*This question is about garbage service for single family households (up to 4-plexes).**

**Right now the City's Seattle Public Utilities picks up garbage on a weekly basis. They also pick up food and yard waste every week. Now that food scraps are allowed in the weekly yard and food waste service, the City's Seattle Public Utilities is considering changing garbage to an every other week service. If this change is made, how satisfied would you be?**

- Extremely satisfied
- Very satisfied
- Somewhat satisfied
- Not very satisfied
- Not at all satisfied
- Don't know/No opinion

**What is the top reason you would be "somewhat satisfied," "not very satisfied," or "not at all satisfied" about changing garbage to an every other week service?**

**(Select from the drop-down menu)**

If you selected other, please describe in box below

**\*Would you favor or oppose a plan that forbids food waste from being placed in the garbage container? Garbage containers with food and yard waste in them would not get picked up. Seattle already has similar rules about placing garbage in the recycling container and garbage in the food and yard waste container.**

- Strongly favor
- Favor
- Oppose
- Strongly oppose
- Not sure/No opinion

**What is the top reason you would oppose a plan that forbids food waste from being placed in the garbage container?**

**(Select from the drop-down menu)**

If you selected other, please describe in box below



**\* Businesses are currently only required to recycle paper and cardboard. Would you favor or oppose a plan to require businesses to recycle more materials such as bottles and cans?**

- Strongly favor     Favor     Oppose     Strongly oppose     Not sure/No opinion

**What is the top reason you would oppose a plan to require businesses to recycle more materials such as bottles and cans?**  
**(Select from the drop-down menu)**

If you selected other, please describe in box below

**\* Would you favor or oppose a plan to ask residents to put disposable diapers and pet waste into a separate collection container for pickup? The disposable diapers and pet waste would be composted using a process that kills bacteria and other pathogens.**

- Strongly favor     Favor     Oppose     Strongly oppose     Not sure/No opinion

**What is the top reason you would oppose a plan to ask residents to put disposable diapers and pet waste into a separate collection container for pickup?**  
**(Select from the drop-down menu)**

If you selected other, please describe in box below

**Which of the following things would you be willing to do to help Seattle reduce waste, increase recycling and composting, and keep future costs as low as possible?**

**(Select all that apply)**

- Increase recycling at my business.
- Increase recycling where I shop and work.
- Increase my food waste composting.
- Increase my yard waste composting.
- Reduce the size of my garbage container.
- Separate disposable diapers and pet waste from my garbage.
- Pay a little more on my monthly bill so that Seattle residents and businesses can do more to reduce waste and protect the environment.
- Have my garbage collected every other week to keep future garbage, recycling, and food and yard waste composting costs lower.
- Nothing
- Other (please specify)

**What other input would you like to provide to Seattle Public Utilities about waste reduction, recycling, and food and yard composting services in Seattle?**

The following demographic questions are intended to measure how well Seattle Public Utilities provides equitable services. This information is completely anonymous and confidential. Your participation is voluntary.

**Which of the following broad ranges includes your age?**

- 18-34
- 35-54
- 55-64
- 65 or older
- Decline to answer

**What is your race? (Select all that apply)**

- White
- Black or African American
- Chinese
- Filipino
- Vietnamese
- Don't know
- Decline to answer
- Other (please specify)

**Are you of Hispanic, Latino, or Spanish Origin?**

- Yes
- No
- Decline to answer

The following demographic questions are intended to measure how well Seattle Public Utilities provides equitable services. This information is completely anonymous and confidential. Your participation is voluntary.

**What is the primary language spoken at your home?**

- English
- Spanish
- Russian
- Vietnamese
- Chinese, Mandarin, Cantonese
- African Languages (such as Somali, Amharic, Oromo, Tamazight)
- Decline to answer
- Other (please specify)

**Did you immigrate to the United States?**

- Yes
- No
- Decline to Answer

**Including yourself what is your family/household size?**

- 1
- 2
- 3
- 4
- 5 or over
- Decline to answer

The following demographic questions are intended to measure how well Seattle Public Utilities provides equitable services. This information is completely anonymous and confidential. Your participation is voluntary.

**Please identify your annual household income.**

- Under \$30,000
- \$30,000 – \$39,000
- \$40,000 – \$49,000
- \$50,000 - \$59,000
- \$60,000 to \$75,000
- \$75,000 – \$100,000
- \$100,000 and over
- Decline to answer

**What is your gender?**

- Male
- Female
- Decline to answer

**What is the highest degree or level of school you have completed?**

- Something less than high school graduate or GED
- High school graduate or GED
- Some college or technical school or AA degree
- 4 year college degree
- Post graduate work or degree

Those are all the questions we have for you today. Thank you very much. If you would like to ask a question or offer a comment about the Solid Waste Management Plan, please send an e-mail to [SPU\\_SolidWastePlan@seattle.gov](mailto:SPU_SolidWastePlan@seattle.gov).

Self Hauler Survey

Survey administration date \_\_\_\_\_ Location North South (circle one)
Name of survey administrator \_\_\_\_\_

- 1. Are you here for business or personal use?
o business (go to Q#1a)
o personal (go to Q#2)
a. If business, what kind of business \_\_\_\_\_

2. In what neighborhood is your home or business located? \_\_\_\_\_
(prompt with Seattle map of neighborhoods if needed)

The following recommendations from the City's solid waste management plan, could impact people who use this recycling and disposal station. Please rate the following with 1 being least supportive and 7 being most supportive of the recommendation.

3. A carpet take-back program would allow people to return used carpet to the store where it was purchased or to some other drop-off site. On a scale of 1 to 7 how supportive are you of this recommendation with 1 for the lowest level of support and 7 for the highest level of support? (please circle)

1 2 3 4 5 6 7
Least supportive Most supportive

4. A paint take-back program would allow people to return used paint to the store where it was purchased. On a scale of 1 to 7 how supportive are you of this recommendation with 1 for the lowest level of support and 7 for the highest level of support? (please circle)

1 2 3 4 5 6 7
Least supportive Most supportive

5. When the new stations are ready, we want to ask loads that are more than half construction and demolition debris to unload on a separate area of the floor of the station. On a scale of 1 to 7 how supportive are you of this recommendation with 1 for the lowest level of support and 7 for the highest level of support? (please circle)

1 2 3 4 5 6 7
Least supportive Most supportive

6. The next four questions are about banning recyclable construction and demolition materials from disposal in the station garbage pit.

a. Asphalt paving wouldn't be allowed starting in 2013. On a scale of 1 to 7 how supportive are you of this recommendation with 1 for the lowest level of support and 7 for the highest level of support? (please circle)

1 2 3 4 5 6 7
Least supportive Most supportive

b. Asphalt roofing shingles wouldn't be allowed starting in 2014. On a scale of 1 to 7 how supportive are you of this recommendation with 1 for the lowest level of support and 7 for the highest level of support? (please circle)

1 2 3 4 5 6 7
Least supportive Most supportive





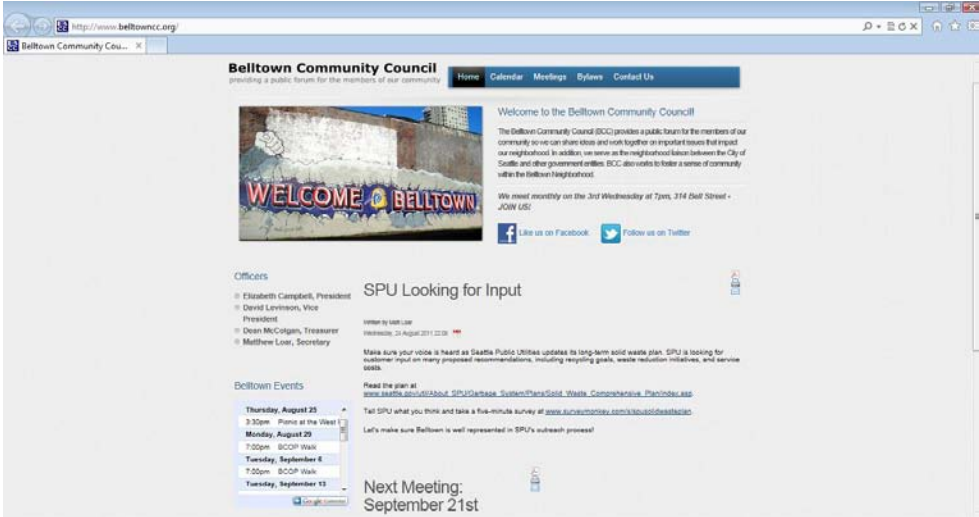




# PIP Appendix 8. Web and Social Media/Networking Activities

(Website, blog and Facebook postings of the draft of the Seattle Solid Waste Plan and survey link)

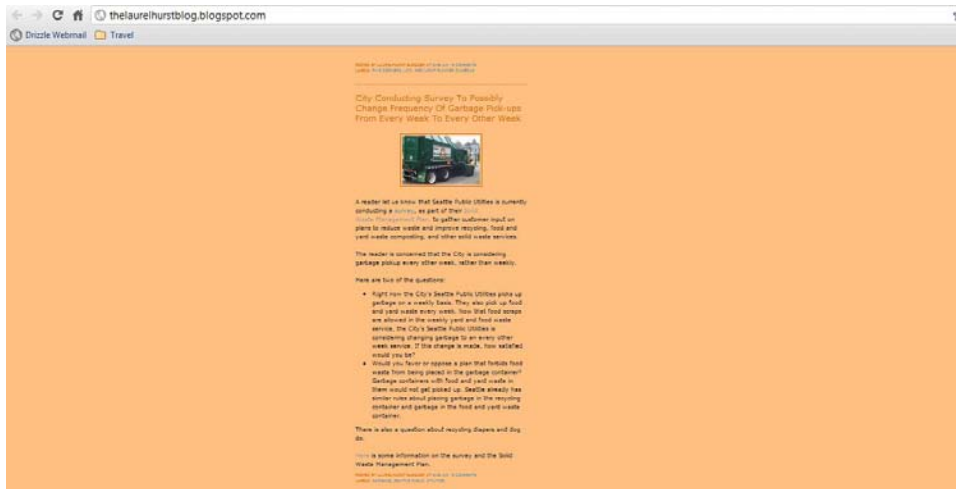
## Belltown Community Council Blog



## Broadview Neighborhood Blog



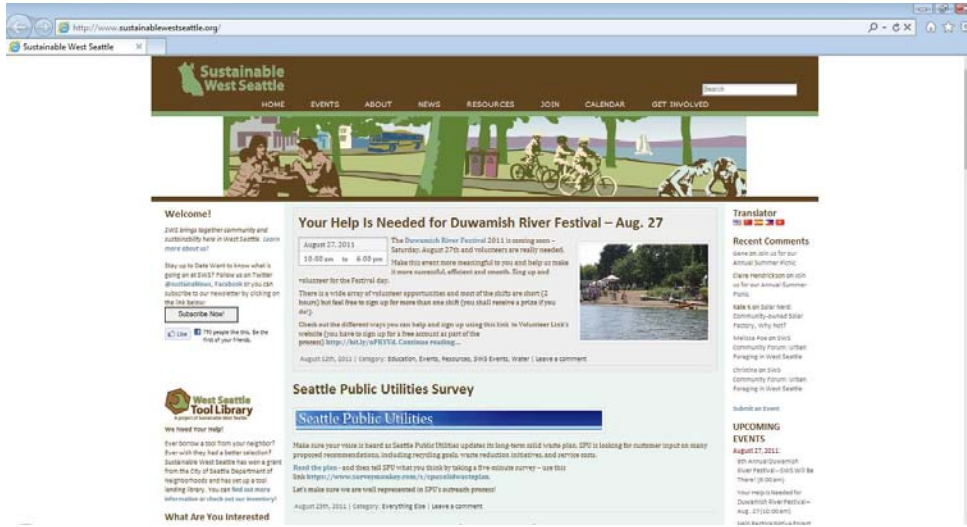
## Laurelhurst Neighborhood Blog



## New Rainier Vista Blog



### Sustainable West Seattle Blog and Facebook Posting



MEMBER LIST: 100% off on all orders placed b/w. Aug 23 & Labor Day Weekend. Hours: Tues-Fri 11am-6pm, Sat 12-5, Sun 12-4.  
Share - August 23 at 9:25am

**Lindy Wishard**  
Make sure your voice is heard as Seattle Public Utilities updates its long-term solid waste plan. GPU is looking for customer input on recycling goals, waste reduction initiatives, and service costs.  
Read the plan at [www.seattle.gov/utl/About\\_GPU/Garbage\\_SystemPlans/Solid\\_Waste\\_Comprehensive\\_Plan/Index.asp](http://www.seattle.gov/utl/About_GPU/Garbage_SystemPlans/Solid_Waste_Comprehensive_Plan/Index.asp).  
Tell GPU what you think and take a five-minute survey at [www.surveymonkey.com/j/surlidwastplan](http://www.surveymonkey.com/j/surlidwastplan).

**Seattle Public Utilities - Solid Waste Management Plan**  
[www.seattle.gov](http://www.seattle.gov)  
The Solid Waste Management Plan updates the City of Seattle's programs and services to prevent waste, increase recycling and composting, and improve services. The plan is currently being updated and the draft chapters are listed below.  
Share - September 1 at 5:03pm

**Lu Leylan**  
My best summer at Madison Valley. Great place to live. Lu Leylan  
August 13 at 9:35am

**The Valley View** Welcome to the valley! We hope you enjoy all the summer fun.



Recycling Potential  
Assessment Model and  
Environmental Benefits  
Analysis

P



**Evan Blackwell**

*The Disposable Heroes series, 2005*

Various plastics

22 x 10 x 17 inches

# Economic Analysis of New Waste Prevention and Recycling Programs

Jeffrey Morris, Ph.D., Economist, Sound Resource Management Group  
Jennifer Bagby, Ph.D., Principal Economist, Seattle Public Utilities

**This paper briefly describes two economic models used to produce the recommended new waste prevention and recycling programs in Seattle’s 2011 Solid Waste Plan. The first is the Recycling Potential Assessment (RPA) Model which is a model that forecasts tonnages and financial costs and benefits. The second is Measuring the Environmental Benefits Calculator (MEBCalc™) model used to calculate the environmental benefits from the same set of programs.**

## Recycling Potential Assessment (RPA) Model Summary

Seattle Public Utilities uses the Recycling Potential Assessment (RPA) Model to

- forecast waste generation
- calculate estimates of tonnages that can be diverted from landfill due to recycling, waste reduction and composting
- provide financial cost and benefit estimates for each of the scenarios analyzed in the model

The purpose of this section is to give a summary of the design of the RPA and how it works.

### Model Definitions

The RPA model actually consists of two separate RPA models: one for the municipal solid waste (MSW) stream and one for the construction and demolition debris (C&D) waste stream. The MSW and C&D RPA models are structured very similarly, so this overview is written generally to apply to both models. There is a slight difference between the two models, since in C&D we have beneficial uses as well as recycling. The differences will be pointed out as the models are described.

The waste streams are defined, not so much by the materials that are included in them but in the method and location of disposal. Waste collected from within Seattle, and taken to transfer stations and transferred into containers for transportation to the MSW landfill in Arlington, Oregon, is considered MSW waste (or “garbage”). The waste collected separately under the C&D collection contract--destined for disposal in a C&D landfill--is considered C&D waste.

On the other hand, recycling tonnages are credited to either the C&D sector or the MSW sector depending on the recycled material. For example, any recycled wood waste is counted towards the C&D recycling rate. Plastic film is counted towards the MSW recycling rate, even though plastic film occurs in both the C&D and MSW waste streams. The material accounting is handled in this fashion because, in a lot of cases, the recycling reports SPU uses to track recycled materials are not specific enough for us to tell where the material *would have been* disposed (in a C&D vs MSW landfill) had it not been recycled.

### Four Modules

Four main modules comprise the RPA model: Waste Generation, Recycling Tonnages, Cost Module and Reporting Module.

#### Waste Generation Module

The first step in the RPA model is to forecast the amount of waste generation in Seattle, broken down into three sectors for the MSW model (Residential Single Family and Multi-Family, Commercial and Self Haul). The C&D model just has one overall sector. The forecast estimate equations use econometric techniques and include a variety of economic, demographic, price and weather variables.

Each forecasted waste stream is then further broken down into 20 material types, based on the waste stream composition data Seattle regularly collects. The model forecasts waste generation, by sector by material, out 30 years.

#### Recycling Tonnages Module

The next step is the recycling module, which contains data about existing programs and assumptions about new programs.

**Existing recycling and composting programs** are modeled based on how much they are currently diverting (the existing recovery rate). Detailed recycling data is collected on a regular basis for programs such as the Seattle’s curbside recycling program (which is implemented under a contract with Seattle). Daily “truck level” data is available for total tons collected for each program, and periodic recycling composition data is used to separate the tons collected into the material detail. For other programs, such as most of the commercial recycling (which is collected privately), tons recycled come from an annual report all recyclers in Seattle are required to submit as part of their business license renewal. These reports have annual tons collected by material.

**New recycling programs** are modeled using judgment as to the ultimate recovery rate a program is projected to achieve, and the “ramp” (or path) the program follows from the time it starts until it reaches a steady recovery rate. The model is set up to run “scenarios,” which are groups of programs that are assembled according to some overall themes or scenario descriptions. A base

scenario typically models existing recycling programs (without any new programs). Other scenarios then layer on top of the base existing programs.

For each new program, parameters are developed that include what sector and material the program will address, the year the program starts and the new program's ramp. When a new program is included in a scenario that targets the same material that an existing program does, the new program has available to it what remains after the existing program is attributed its tonnages. For example, we have a curbside organics program that diverts food waste, and if we then want to model a program that makes the food waste mandatory, the tons attributed to the new mandatory program are the additional tons diverted after the existing program tons are calculated.

### Financial Costs and Benefits Module

The next step in the model is to calculate program costs and financial benefits. The calculations use the factors in the waste generation and recycling tonnages modules just described.

For **program costs**, each program can be modeled using a variety of types of costs. The intention is to model program costs at a detailed enough level so that as program recovery rates are varied, costs will vary in a meaningful way. Programs can have fixed and/or variable cost components. The variable components can vary by household, employee, or tons. Programs can also have capital costs, and the life of the capital can be set to reflect what makes sense for that program's capital types. Examples of typical program costs are: costs of collection, bin or cart cost, education, and processing costs.

The **financial benefits** of recycling include costs we do not have to incur—which is the cost to have recyclable material handled as garbage and disposed in a landfill. When we recycle, tons of material are diverted from garbage and no longer need collecting, transferring, hauling to the rail head, and landfilling. There are savings at each step of the way and these savings are the direct financial benefits to recycling. These are often described as “avoided costs”.

In order to calculate these benefits, the model needs to have, as inputs, the variable part of the cost to collect, transfer, transport and dispose of the MSW or C&D. Not all of the costs of collecting a ton of garbage are saved when the ton is diverted to recycling. Only the part of the costs that vary with tons is saved. For example, the variable part of the residential collection cost is calculated based on SPU's collector contracts. Contractors are reimbursed for collection based on a formula that has fixed and variable components. When tonnages vary, we can estimate the effect on the contractor payment using the formula in the collection contract. (The formulas in the contract were developed to try to reflect the reality of how collection costs are accrued. There are large fixed costs associated with collection, including the trucks and the costs to weekly drive by each household, for example. The variable portion of the costs is small for collection since the truck must pass by the household each week, regardless of the amount of waste that is put out for disposal.)



Similarly, we have transfer station and haul cost models which we use to determine the variable portion of these two functions. Finally, disposal costs are considered to be 100% variable with tons. This is because for MSW we have a long-term contract where we pay a per-ton fee for rail haul and disposal, and the fee does not depend on how many tons are delivered.

The cost model uses the above information in the calculation of the financial benefits of recycling. (A second group of benefits, the environmental benefits of recycling, are handled outside of the RPA model and will be described in the next section.) The result of the cost model is the additional costs of adding the recycling program (which include education, collection, any capital costs, processing, etc), and the benefits (or avoided costs) of not having to collect the material for disposal in a landfill.

### **Reporting Module**

The final module in the RPA model is simply used to develop reports so detailed results of each model run can be presented as needed. Results reported include displaying the tons recycled by year by material and by program. Reports also show the recovery rate for each material by sector, and an overall recycling rate. The C&D model shows a second rate, that we call the “beneficial use” rate. This rate includes tons that are diverted from disposal to be used for energy production or landfill cover. The report tables following this write-up are examples of the reports generated by the reporting module.

## Environmental Benefits to Recycling

Beginning with the 2004 Plan Amendment “On the Path to Sustainability” SPU has been estimating a series of external benefits to recycling. This section describes the steps used to model these external benefits. We start by introducing some background on the methodology, followed by more detail on how environmental benefits are quantified. The results of applying the methodology are shown in the 2 charts placed at the end.

### Introduction

Handling and disposal of waste causes external environmental costs and benefits. Externalities are impacts on the environment that are not “counted” in the price (cost) of the activity.

For example, using recycled instead of virgin feedstock to manufacture paper, aluminum cans or tin cans creates measureable environmental benefits. Many of these benefits are from reduced energy use in the production process and associated avoided emissions. There are also measureable benefits of diverting organics from landfills. Landfilled organics produce methane, a powerful greenhouse gas. We have been working over the past couple of years to be able to both quantify and monetize these benefits.

There has been extensive research in the area of quantifying these external benefits over the past 25 years. An important early research initiative was a seminal study done by the Tellus Institute (Tellus Institute, The Council of State Governments, US EPA, and New Jersey Department of Environmental Protection and Energy, *CSG/Tellus Packaging Study: Assessing the impacts of production and disposal of packaging and public policy measures to alter its mix*, May 1992). This study examined both the upstream effects of using recycled material versus virgin material in the production of new products. It also looked at the downstream effects of additional trucks on the streets, and reduced materials at landfills.

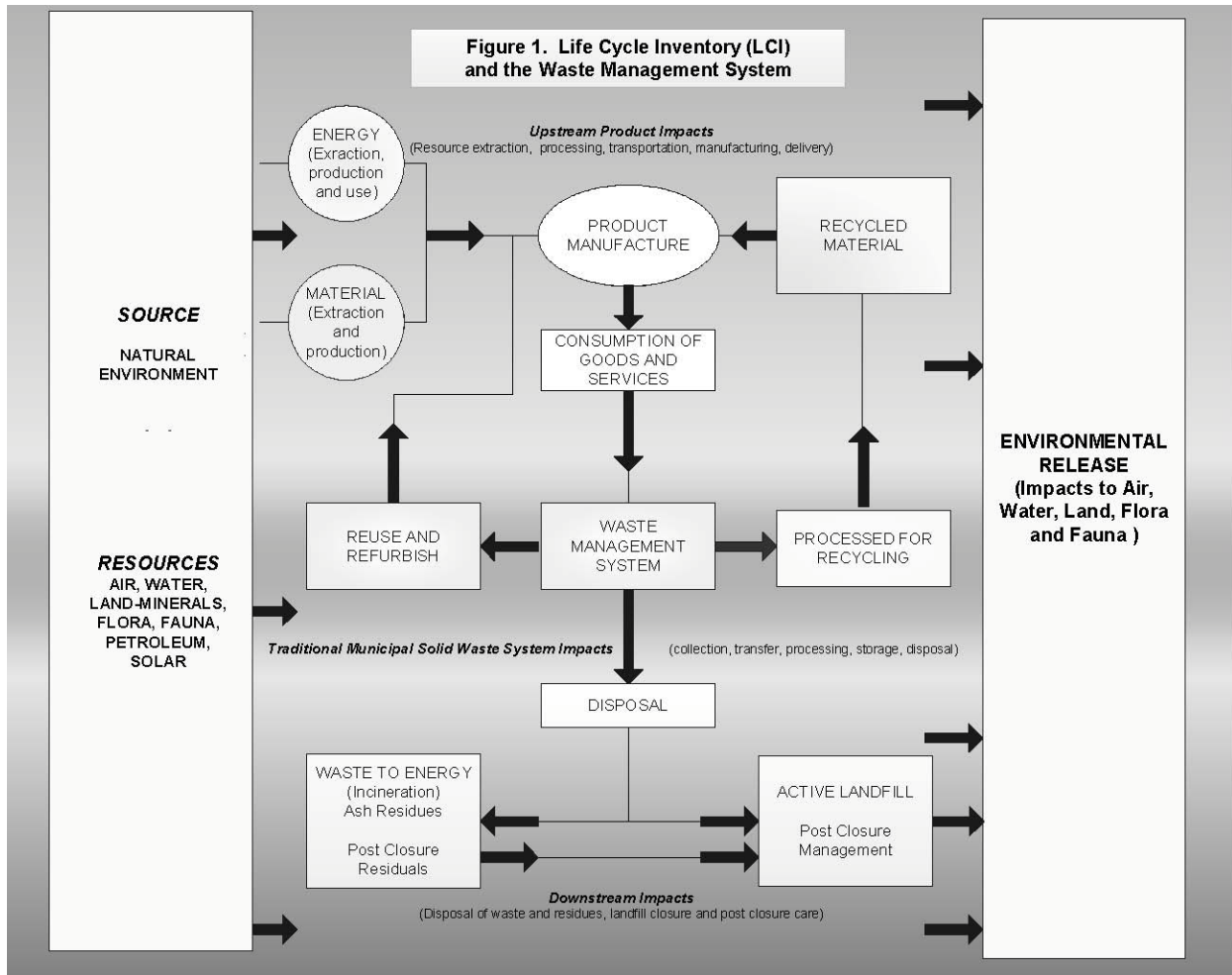
The US EPA has extensive information on their website on this topic (e.g., see <http://www.epa.gov/osw/consERVE/rrr/recycle.htm>). EPA also funded the development of a solid waste planning tool, the MSW Decision Support Tool (DST), which optimizes on cost, recycling percentage or levels of pollution (see <http://www.epa.gov/osw/nonhaz/municipal/pubs/ghg/f02024.pdf>).

SPU has used the DST tool, and upstream effects information provided in the database that supports the tool, to examine the externalized costs of some of its recycling programs.

SPU now uses the MEBCalc™ tool to estimate and quantify the environmental value of recycling programs. This tool takes into account the environmental costs of collection, processing and hauling activities needed for recycling. These environmental costs are deducted

from the environmental benefits of producing products using recycled rather than virgin feedstocks.

The following graphic illustrates material flow and the types of externalities associated with the life cycle of materials.



## How External Benefits Are Quantified and Monetized

Going from the tons of a variety of recycled materials to a dollar value of the environmental benefit involves a series of steps. First, recycled/composted tons, by material, are taken from the outputs of the RPA Model. Then a variety of tools and databases (described below) provide information on quantities of pollutants that are not produced when material is recycled or composted instead of being thrown away.

For example, manufacturing a new aluminum can using a recycled can uses less energy--which results in the release of fewer pollutants due to the lower energy requirement. Less pollution

means lower public health and other environmental impacts from producing the aluminum can. Based on the costs that pollution causes for public health and the environment, we then can calculate the cost savings from making the aluminum can out of a recycled can rather than newly mined bauxite and other virgin raw materials.

Large numbers of pollutants are reduced for each of the life cycle environmental impacts (described below) for all of the recycled and composted materials. This is handled by using one pollutant as an index for each of these impacts. The most familiar example is CO<sub>2</sub> used as the index for global warming. If methane is one of the pollutants reduced due to recycling or composting, this is expressed in units of CO<sub>2</sub>. All the other pollutants that contribute to global warming are also expressed in units of CO<sub>2</sub>, and this allows them to be added together. Hence the term CO<sub>2</sub> equivalents. The next step is then to place a value on (i.e., monetize) the reduction in CO<sub>2</sub>. This step of monetization allows all the life cycle impacts to be summarized in dollars, and added onto the financial costs and benefits of recycling calculated in the RPA model.

The current status of the art of quantifying external environmental benefits provides monetary values on at least 7 different types of environmental impacts. This allows us to represent some of the upstream savings when material is recycled instead of disposed. The next section describes the 7 damages (impacts) we have valued, followed by a discussion of other impact categories and benefits not quantified.

### **Life Cycle Impact Categories: Short Description & Estimates of Impact Cost**

The following descriptions of the 7 impact categories, or indices, are based on Jane Bare, TRACI 2.0: the tool for the reduction and assessment of chemical and other environmental impacts 2.0, *Clean Technologies and Environmental Policy*, 2011 13(5) 687-696. This article provides additional detail on environmental impact categories. The 7 impact categories include

- 1. Global warming potential***
- 2. Acidification potential***
- 3. Eutrophication potential***
- 4. Respiratory Human Health Impact Potential***
- 5. Non-Cancer Human Health Impact Potential***
- 6. Cancer Human Health Impact Potential***
- 7. Ecological toxicity potential***

#### **1. Global Warming Potential**

This index characterizes greenhouse effect increase due to emissions generated by humankind. Life Cycle Analyses (LCAs) often use a 100-year time horizon to frame the global warming potential of greenhouse gases. For example, carbon dioxide (CO<sub>2</sub>) from burning fossil fuels to generate energy is the most common source of greenhouse gases. Methane from anaerobic

decomposition of organic material is another large source of greenhouse gases. The index often used for global warming potential from greenhouse gas releases is quantities of CO<sub>2</sub> equivalents.

Estimates of the dollar cost of a ton of greenhouse gases, measured as CO<sub>2</sub> equivalents, range quite widely. At the low end, an estimate could be based on prices for emissions permits traded under voluntary greenhouse gas emission limitation agreements, which hover around \$1 per ton CO<sub>2</sub>. A high-end estimate could be based on the \$85 per metric ton cost developed in Nicholas Stern, *The Economics of Climate Change: The Stern Review*. Cambridge and New York: Cambridge University Press, 2007. There are even higher estimates for the cost of carbon emissions. However, for this evaluation we used \$40 per ton of CO<sub>2</sub> emissions.

## **2. Acidification Potential**

This index characterizes the release of acidifying compounds from human sources, principally fossil fuel and biomass combustion, which affect trees, soil, buildings, animals and humans. The main pollutants involved in acidification are sulfur, nitrogen and hydrogen compounds – e.g., sulfur oxides, sulfuric acid, nitrogen oxides, hydrochloric acid, and ammonia.

There are economic benefits of recycling due to reductions in the releases of acidifying compounds. These reductions are due to decreased reliance on virgin materials in manufacturing products. The index often used for acidification potential is sulfur dioxide (SO<sub>2</sub>) equivalents.

One impact cost estimate (of releases of acidifying compounds) is provided by the spot market price for SO<sub>2</sub> emissions permit trading under the Clean Air Act's cap and trade program. EPA's spot market auctions for emissions permits for the years 2005 through 2010 averaged \$410 per ton SO<sub>2</sub>. We used this valuation for reductions in releases of acidifying compounds.

## **3. Eutrophication Potential**

This index characterizes the addition of mineral nutrients to soil or water. In both media, adding large quantities of mineral nutrients (such as nitrogen and phosphorous) results in generally undesirable shifts in the number of species in ecosystems, that is, a reduction in ecological diversity. In water, it tends to increase algae growth, which can lead to low oxygen, causing death of species such as fish.

There are economic benefits of recycling associated with the resulting reductions in releases of nitrifying compounds. This decreased release is due to decreased reliance on virgin materials in manufacturing products. For eutrophication potential, the index often used is quantities of nitrogen (N) equivalents.

Our estimate of the impact cost of releases of nitrifying compounds is based on EPA's cost-effectiveness analysis for the NPDES regulation on effluent discharges from concentrated animal feeding operations. That analysis estimated that costs up to \$4 per ton of nitrogen removed from wastewater effluents were economically advantageous. (*Economic Analysis of the Final Revisions to the National Pollutant Discharge Elimination System Regulation and the Effluent*

*Guidelines for Concentrated Animal Feeding Operations*, EPA-812-R-03-002, December 2002, p. E-9.)

#### 4. Respiratory Human Health Impact Potential

Criteria air pollutants are solid and liquid particles commonly found in the air. These include coarse particles known to aggravate respiratory conditions such as asthma, and fine particles that can lead to more serious respiratory symptoms and disease. The particular criteria air pollutants that cause these human health effects are nitrogen oxides, sulfur oxides, and particulates.

We denominated this impact category in PM<sub>2.5</sub> equivalents (particulate matter no larger than 2.5 microns). A mid-range estimate of the human health costs of PM<sub>2.5</sub> emissions is \$10,000 per ton, as discussed in Eastern Research Group, *Draft Report: Cost Benefit Analysis for Six "Pure" Methods for Managing Leftover Latex Paint - Data, Assumptions and Methods*, prepared for the Paint Product Stewardship Initiative, 2006.

#### 5. Non-Cancer Human Health Impact Potential:

Under the Life Cycle Initiative of the United Nations Environment Program (UNEP)/Society of Environmental Toxicology and Chemistry (SETAC), various international multimedia model developers created a global consensus model—USEtox—to address an expanded list of substances which might have impacts on human health cancers and non-cancers, as well as on ecotoxicity. The USEtox model adopted many of the best features of these developers' models, and yielded human health cancer and non-cancer toxicity potentials, and freshwater ecotoxicity potentials, for over 3,000 substances including organic and inorganic substances. EPA uses these potentials in its TRACI 2.0 software (*Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts*).

The economic benefits of recycling include reductions in releases of compounds toxic to humans. These toxic reductions are due to decreased reliance on virgin materials in manufacturing products. Tons of toluene is used as the human toxicity potential index.

As discussed in Jeffrey Morris and Jennifer Bagby, *Measuring Environmental Value for Natural Lawn and Garden Care Practices*. *International Journal of Life Cycle Assessment*, 2008, 13(3) 226-234, a mid-range estimate of \$118 per ton of toluene equivalents is a reasonable estimate to monetize non-cancer human health impacts caused by substances such as mercury, toluene and acrolein.

#### 6. Cancer Human Health Impact Potential:

A mid-range estimate of \$3,030 per ton of benzene equivalent releases to air is used to monetize cancer human health impacts caused by emissions of substances such as formaldehyde, benzene and mercury.

## 7. Ecological Toxicity Potential:

EPA, in its TRACI 2.0 software, also provides toxicity equivalency potentials that measure the relative potential for harm to terrestrial and aquatic ecosystems from chemicals released into the environment. The estimated cost to ecosystems of chemical releases is \$3,280 per ton of 2,4-D herbicide equivalents released to waterways, as discussed in Morris and Bagby (2008). This may be a very conservative cost estimate based on the citation by Eastern Research Group (2006) of remediation costs for 2,4-D removal of \$368,000 per ton.

### **Impact Categories Not Yet Quantified, Material Types Not Yet Evaluated, And Externalized Costs Underestimated**

Currently, economic benefits estimates for SPU recycling programs do not include any benefit estimates for several materials such as gypsum wallboard, household batteries, carpet and paint. LCA research is currently underway so that these materials can be included in future calculations of recycling's environmental benefits.

Environmental impact and resource depletion impacts include the following categories that are not presently included in our quantification of benefits. This is due to the absence of emissions data for the specific pollutants tracked under some of these categories, the lack of quantitative measures to relate emissions to impacts, and/or the absence of well-researched monetization estimates:

1. Fossil Fuel Depletion Potential
2. Habitat Alteration Potential
3. Smog Formation Potential
4. Ozone depletion Potential
5. Indoor Air Quality
6. Water Intake

Estimates of damage costs may underestimate the actual costs, to future generations, of current releases of pollutants and depletion of resources. This seems a particularly acute problem for ecosystem impacts, given our currently limited understanding of long run impacts from

- accelerated species extinctions and decreases in biodiversity, and
- associated decreases in various aspects of ecosystems' ability to, among other things, cycle nutrients, clean our air and clean our water.

Future costs from cumulative impacts of global warming are also difficult to predict.

Finally, estimates of human health costs from toxic and carcinogenic releases do not presently appear to account adequately for impacts (cumulative and interactive) of many of the chemical releases to the environment. There may be as many as 75,000 to 100,000 chemical compounds used in industrial processes and commerce.

To put this into perspective, our seven impact categories quantify releases to air and water for less than a thousand substances. The MSW Decision Support Tool (DST) developed under sponsorship of EPA provides full life cycle quantification for releases of just ten air pollutants and seventeen water pollutants. The DST database provides upstream quantification of releases for recycled-versus virgin-content manufacturing (including the extraction and refining stages) for a number of other substances. But even there, the number of tracked substances totals well under 100.

### **Other Benefits Not Quantified: Existence Value of Recycling**

Waste disposal reduction (which lowers the need for landfills), and the conservation of limited resources, are two public goods provided by recycling programs. Within the context of present market mechanisms, the economic value of these public goods is unlikely to be reflected in market prices--and therefore likely to escape benefit-cost assessments of recycling. Consumers who choose to participate in recycling programs may not see the public good benefits from their own recycling (since their contribution is relatively small compared to the total); however, they do obtain benefits from everybody else's recycling efforts. This is a type of non-use (sometimes called existence) value of recycling programs. Likewise, consumers who choose not to participate in recycling programs also enjoy the benefits of these public goods.

### **Analysis Results for Seattle's Solid Waste Plan Waste Reduction and Recycling Recommendations**

The following two charts illustrate the magnitude of the additional benefits from recycling MSW and C&D materials, for both past years and planned future recycling through 2030. These benefits are calculated by first starting with the tons recycled/composted from the RPA model for the recommended scenarios. Then using the techniques described above and embodied in MEBCalc™, the benefits are quantified across the life cycle impact categories using an indexed pollutant for each category. Then a monetary value is placed on each of the indexed pollutants to allow these different life cycle impact categories to be expressed in dollar terms so they can be added together.

For MSW, Chart 1 shows estimated environmental benefits for actual recycling from 1997 through 2010. For C&D, Chart 2 shows estimated environmental benefits for actual C&D material recycling for 2007 through 2010. Reductions in climate change and human health impacts account for most of the environmental value of MSW recycling. This is a result of diverting materials from disposal to recycling. Most of the environmental value for C&D recycling comes from reductions in human health and ecosystem toxicity impacts, as a result of diverting C&D materials from disposal. For the years 2007 through 2010, and a few years following 2010, reductions in climate change impacts also provide a substantial portion of the environmental benefits for C&D recycling.



Chart 1 Environmental Value (\$millions) of Recycled MSW Tons. 1997-2030

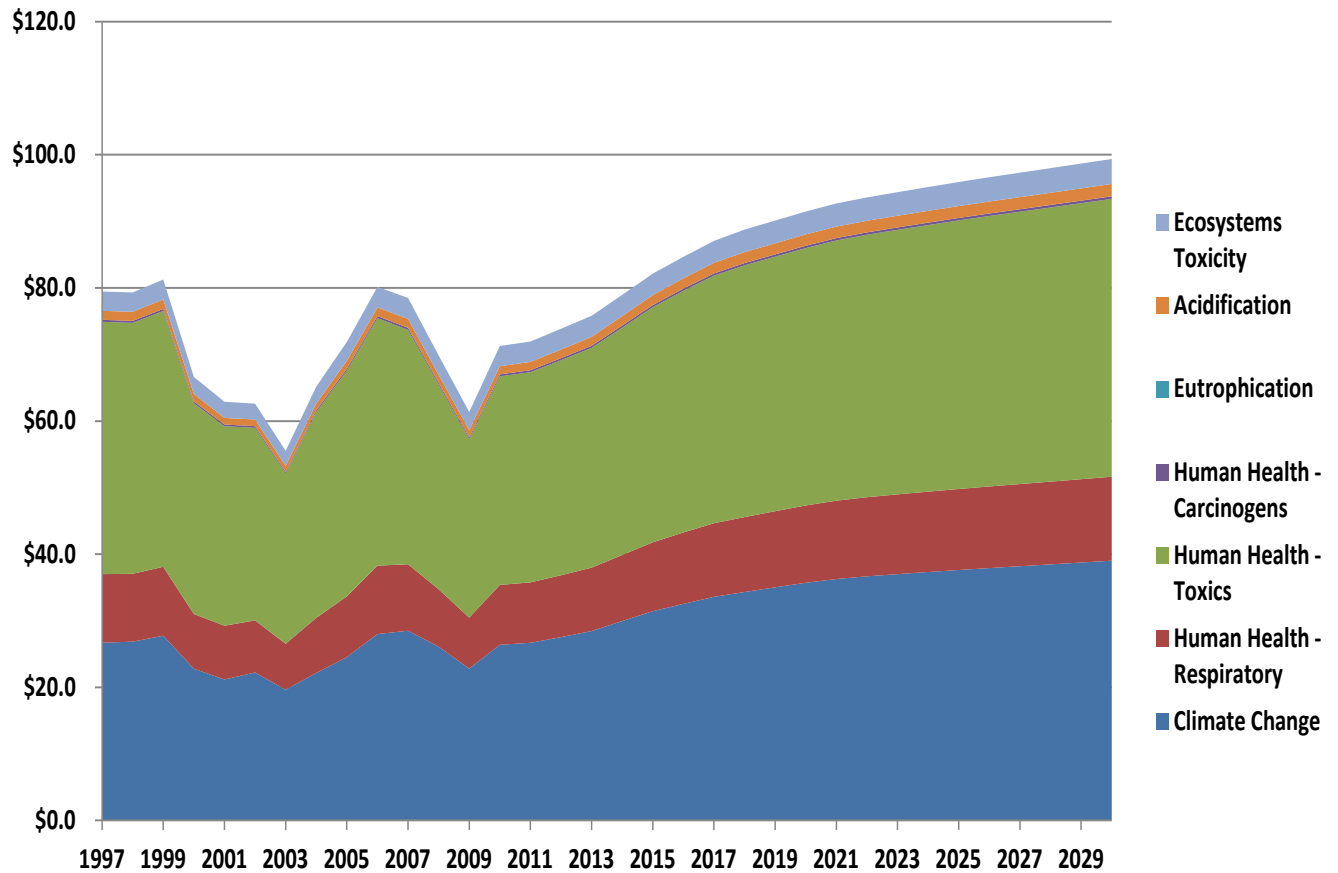


Table 1 Environmental Value (\$millions) of Recycled MSW Tons\*

| Year | Climate Change | Human Health - Respiratory | Human Health - Toxics | Human Health - Carcinogens | Eutrophication | Acidification | Ecosystems Toxicity | Total Environmental Value |
|------|----------------|----------------------------|-----------------------|----------------------------|----------------|---------------|---------------------|---------------------------|
| 2010 | 26.4           | 9.0                        | 31.3                  | 0.3                        | 0.0            | 1.2           | 3.0                 | 71.5                      |
| 2020 | 35.7           | 11.6                       | 38.7                  | 0.4                        | 0.0            | 1.7           | 3.4                 | 92.9                      |
| 2030 | 39.0           | 12.6                       | 41.7                  | 0.4                        | 0.0            | 1.9           | 3.8                 | 101.0                     |

\*Monetized Value of Specific Environmental Impacts Reductions

Chart 2 Environmental Value (\$millions) of Recycled C&D Tons, 2007-2030

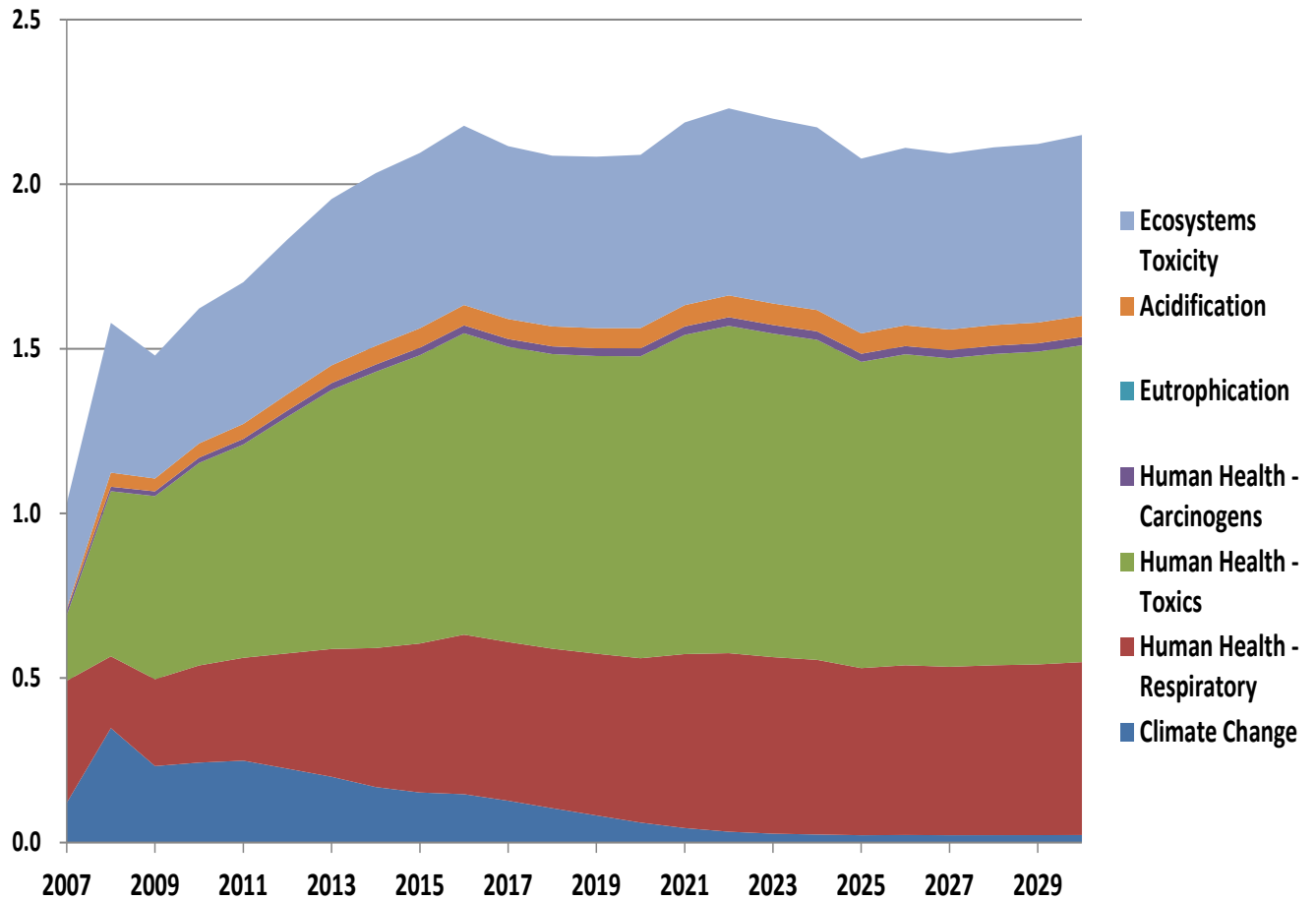


Table 2 Environmental Value (\$millions) of Recycled C&D tons\*

| Year | Climate Change | Human Health - Respiratory | Human Health - Toxics | Human Health - Carcinogens | Eutrophication | Acidification | Ecosystems Toxicity | Total Environmental Value |
|------|----------------|----------------------------|-----------------------|----------------------------|----------------|---------------|---------------------|---------------------------|
| 2010 | 0.243          | 0.295                      | 0.615                 | 0.016                      | 0.000          | 0.043         | 0.410               | 1.623                     |
| 2020 | 0.060          | 0.500                      | 0.918                 | 0.024                      | 0.000          | 0.062         | 0.526               | 2.090                     |
| 2030 | 0.023          | 0.525                      | 0.963                 | 0.025                      | 0.000          | 0.064         | 0.550               | 2.150                     |

\*Monetized Value of Specific Environmental Impacts Reductions



Summary - Program Tons Per Year Scenario 1, Status Quo

| Year | Recycle Rate | Total Material | Total Dipped | Total Recycled | Order ->     | 2             | 3             | 4           | 5 |
|------|--------------|----------------|--------------|----------------|--------------|---------------|---------------|-------------|---|
|      |              |                |              |                | Curb/Apt Rec | BY YW In City | BY FW In City | Grasscycl e |   |
|      |              |                |              |                | 2            | 3             | 4             | 5           |   |
| 1997 | 44.4%        | 816,174        | 453,787      | 362,386        | 67,509       | 6,779         | 16,470        | 5,119       |   |
| 1998 | 44.2%        | 820,212        | 457,598      | 362,613        | 70,279       | 6,680         | 15,887        | 6,038       |   |
| 1999 | 44.0%        | 852,299        | 477,433      | 374,866        | 73,478       | 4,002         | 15,590        | 10,660      |   |
| 2000 | 40.0%        | 793,825        | 476,131      | 317,693        | 72,864       | 4,002         | 873           | 10,660      |   |
| 2001 | 39.3%        | 782,894        | 475,270      | 307,623        | 72,382       | 4,002         | 873           | 10,660      |   |
| 2002 | 39.7%        | 768,422        | 462,996      | 305,426        | 72,543       | 4,002         | 873           | 10,660      |   |
| 2003 | 38.2%        | 741,656        | 458,010      | 283,646        | 73,780       | 4,002         | 873           | 10,660      |   |
| 2004 | 41.2%        | 780,061        | 458,405      | 321,656        | 76,860       | 4,800         | 2,400         | 9,900       |   |
| 2005 | 44.2%        | 789,740        | 440,876      | 348,864        | 81,139       | 4,600         | 2,100         | 9,600       |   |
| 2006 | 47.6%        | 836,373        | 438,380      | 397,993        | 84,531       | 4,600         | 2,100         | 9,600       |   |
| 2007 | 48.3%        | 848,125        | 438,845      | 409,280        | 86,621       | 4,600         | 2,100         | 9,600       |   |
| 2008 | 50.0%        | 789,607        | 394,607      | 395,000        | 81,888       | 4,600         | 2,100         | 9,600       |   |
| 2009 | 51.1%        | 719,423        | 351,688      | 367,735        | 76,584       | 2,600         | 1,100         | 7,100       |   |
| 2010 | 50.9%        | 780,664        | 383,438      | 397,226        | 78,554       | 2,655         | 1,123         | 7,251       |   |
| 2011 | 51.2%        | 783,186        | 382,112      | 401,074        | 78,487       | 2,640         | 1,117         | 7,211       |   |
| 2012 | 52.1%        | 789,299        | 378,194      | 411,105        | 78,592       | 2,628         | 1,112         | 7,176       |   |
| 2013 | 52.9%        | 791,832        | 372,560      | 419,271        | 78,614       | 2,612         | 1,105         | 7,134       |   |
| 2014 | 53.6%        | 794,323        | 368,427      | 425,896        | 78,534       | 2,597         | 1,099         | 7,092       |   |
| 2015 | 54.0%        | 795,698        | 366,081      | 429,617        | 78,380       | 2,582         | 1,093         | 7,053       |   |
| 2016 | 54.2%        | 798,068        | 365,894      | 432,174        | 78,427       | 2,575         | 1,090         | 7,034       |   |
| 2017 | 54.3%        | 802,464        | 367,094      | 435,370        | 79,225       | 2,596         | 1,098         | 7,091       |   |
| 2018 | 54.2%        | 804,837        | 368,556      | 436,282        | 79,100       | 2,583         | 1,093         | 7,055       |   |
| 2019 | 54.1%        | 807,071        | 370,133      | 436,938        | 78,880       | 2,568         | 1,087         | 7,015       |   |
| 2020 | 54.1%        | 810,694        | 372,307      | 438,387        | 78,753       | 2,556         | 1,082         | 6,983       |   |
| 2021 | 54.0%        | 816,837        | 375,451      | 441,386        | 79,374       | 2,568         | 1,087         | 7,017       |   |
| 2022 | 54.0%        | 822,953        | 378,636      | 444,317        | 79,999       | 2,581         | 1,092         | 7,051       |   |
| 2023 | 53.9%        | 829,180        | 381,876      | 447,305        | 80,671       | 2,595         | 1,098         | 7,089       |   |
| 2024 | 53.9%        | 835,530        | 385,174      | 450,355        | 81,363       | 2,609         | 1,104         | 7,127       |   |
| 2025 | 53.9%        | 842,027        | 388,547      | 453,480        | 82,074       | 2,624         | 1,110         | 7,168       |   |
| 2026 | 53.8%        | 848,581        | 391,952      | 456,628        | 82,782       | 2,638         | 1,116         | 7,207       |   |
| 2027 | 53.8%        | 855,143        | 395,363      | 459,780        | 83,494       | 2,652         | 1,122         | 7,246       |   |
| 2028 | 53.7%        | 861,830        | 398,800      | 463,030        | 84,236       | 2,667         | 1,129         | 7,287       |   |
| 2029 | 53.7%        | 868,628        | 402,275      | 466,353        | 85,004       | 2,683         | 1,135         | 7,330       |   |
| 2030 | 53.6%        | 875,647        | 405,864      | 469,783        | 85,825       | 2,700         | 1,143         | 7,377       |   |

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Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs

|      | 6        | 7        | 9        | 10     | 11     | 12       | 13      | 14      | 15       |
|------|----------|----------|----------|--------|--------|----------|---------|---------|----------|
| Year | BY YW    | BY FW    | Curb/Apt | Clean  | Drop   | Com Priv | Foodwar |         | MF       |
|      | Not City | Not City | Org      | Green  | Sites  | Rec      | e       | ABC Ban | Univer   |
|      | 6        | 7        | 8        | 21     | 23     | 30       | Rec/Com | 22      | Org Serv |
|      |          |          |          |        |        |          | p       |         | 13       |
| 1997 | 7,400    | 2,520    | 43,130   | 14,137 | 5,000  | 194,323  | -       | -       | -        |
| 1998 | 7,700    | 2,823    | 40,546   | 13,034 | 5,376  | 194,251  | -       | -       | -        |
| 1999 | 8,000    | 3,127    | 39,737   | 13,692 | 6,612  | 199,968  | -       | -       | -        |
| 2000 | 8,000    | 3,127    | 34,037   | 14,032 | 7,109  | 162,989  | -       | -       | -        |
| 2001 | 8,000    | 3,127    | 36,990   | 15,034 | 7,103  | 149,453  | -       | -       | -        |
| 2002 | 8,000    | 3,127    | 34,503   | 14,353 | 8,340  | 149,025  | -       | -       | -        |
| 2003 | 8,000    | 3,127    | 33,923   | 14,156 | 8,170  | 126,956  | -       | -       | -        |
| 2004 | 5,000    | 1,800    | 38,485   | 14,907 | 8,163  | 159,341  | -       | -       | -        |
| 2005 | 4,800    | 1,600    | 42,603   | 13,925 | 9,232  | 179,265  | -       | -       | -        |
| 2006 | 4,800    | 1,600    | 51,482   | 14,277 | 9,745  | 215,258  | -       | -       | -        |
| 2007 | 4,800    | 1,600    | 54,573   | 14,247 | 11,246 | 219,894  | -       | -       | -        |
| 2008 | 4,800    | 1,600    | 56,364   | 11,893 | 8,662  | 213,493  | -       | -       | -        |
| 2009 | 3,500    | 1,700    | 74,230   | 10,149 | 6,179  | 184,593  | -       | -       | -        |
| 2010 | 3,575    | 1,736    | 76,624   | 11,351 | 6,907  | 205,610  | 1,840   | -       | -        |
| 2011 | 3,554    | 1,726    | 77,214   | 11,571 | 7,033  | 206,360  | 4,161   | -       | -        |
| 2012 | 3,538    | 1,718    | 78,462   | 11,925 | 7,229  | 208,209  | 7,793   | 1,075   | 1,647    |
| 2013 | 3,517    | 1,708    | 79,800   | 12,190 | 7,341  | 208,764  | 11,418  | 2,044   | 3,024    |
| 2014 | 3,496    | 1,698    | 80,962   | 12,414 | 7,373  | 209,507  | 13,795  | 3,043   | 4,285    |
| 2015 | 3,477    | 1,688    | 82,021   | 12,583 | 7,312  | 209,874  | 14,941  | 3,716   | 4,896    |
| 2016 | 3,468    | 1,684    | 83,062   | 12,742 | 7,241  | 210,326  | 15,427  | 4,070   | 5,027    |
| 2017 | 3,496    | 1,697    | 84,518   | 12,824 | 7,182  | 210,741  | 15,628  | 4,223   | 5,051    |
| 2018 | 3,478    | 1,688    | 84,526   | 12,992 | 7,223  | 211,433  | 15,737  | 4,327   | 5,046    |
| 2019 | 3,459    | 1,679    | 84,252   | 13,145 | 7,287  | 212,301  | 15,818  | 4,397   | 5,052    |
| 2020 | 3,443    | 1,671    | 83,989   | 13,295 | 7,362  | 213,756  | 15,967  | 4,454   | 5,077    |
| 2021 | 3,460    | 1,679    | 84,488   | 13,443 | 7,441  | 215,111  | 16,055  | 4,507   | 5,156    |
| 2022 | 3,476    | 1,687    | 84,974   | 13,602 | 7,528  | 216,391  | 16,137  | 4,561   | 5,238    |
| 2023 | 3,495    | 1,696    | 85,501   | 13,761 | 7,615  | 217,631  | 16,214  | 4,614   | 5,324    |
| 2024 | 3,514    | 1,706    | 86,043   | 13,921 | 7,704  | 218,891  | 16,293  | 4,668   | 5,414    |
| 2025 | 3,534    | 1,715    | 86,601   | 14,081 | 7,792  | 220,181  | 16,373  | 4,722   | 5,505    |
| 2026 | 3,553    | 1,725    | 87,150   | 14,241 | 7,881  | 221,505  | 16,456  | 4,776   | 5,598    |
| 2027 | 3,572    | 1,734    | 87,699   | 14,400 | 7,969  | 222,829  | 16,541  | 4,829   | 5,692    |
| 2028 | 3,593    | 1,744    | 88,276   | 14,554 | 8,054  | 224,191  | 16,631  | 4,880   | 5,789    |
| 2029 | 3,614    | 1,754    | 88,874   | 14,705 | 8,137  | 225,576  | 16,722  | 4,931   | 5,888    |
| 2030 | 3,637    | 1,765    | 89,524   | 14,861 | 8,224  | 226,940  | 16,811  | 4,984   | 5,993    |

Summary - Program Sector Materials Diversion by Program  
 Status Quo Year 2025 All MSW Sectors

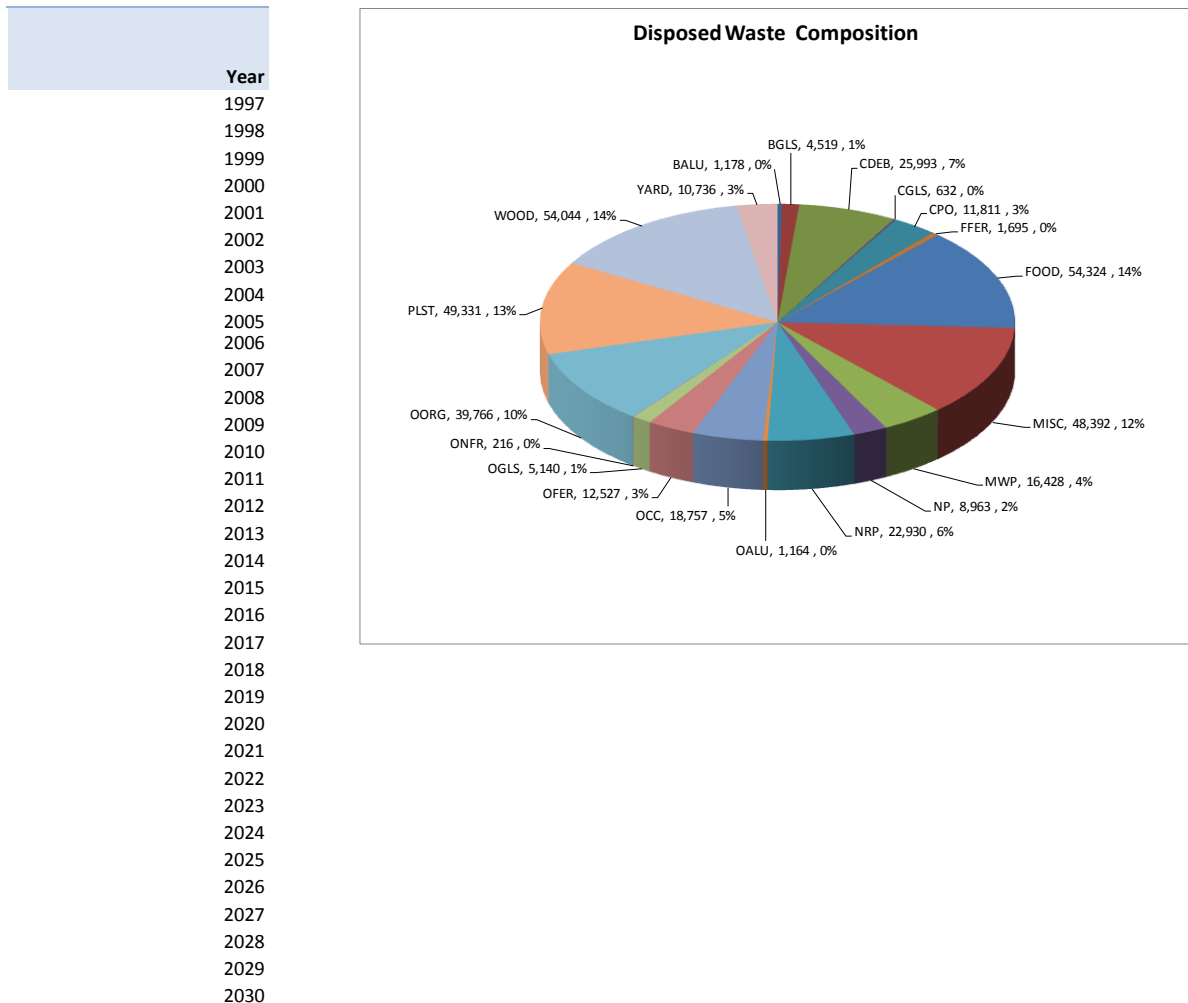
| Material MSW          |                 | Total Disposed | Total Recycled | Total Generated | Percent Recycled | Curb/Apt Rec  | BY YW In City | BY FW In City | Grasscycl e  | BY YW Not City |
|-----------------------|-----------------|----------------|----------------|-----------------|------------------|---------------|---------------|---------------|--------------|----------------|
|                       |                 | 1              | 2              | 3               | (2/3)            | 2             | 3             | 4             | 5            | 6              |
| Aluminum Beverage     | BALU            | 1,178          | 1,854          | 3,033           | 61.1%            | 965           | -             | -             | -            | -              |
| Beverage Glass        | BGLS            | 4,519          | 18,537         | 23,056          | 80.4%            | 15,229        | -             | -             | -            | -              |
| Construction Debris   | CDEB            | 25,993         | 4,722          | 30,715          | 15.4%            | -             | -             | -             | -            | -              |
| Container Glass       | CGLS            | 632            | 2,981          | 3,613           | 82.5%            | 2,981         | -             | -             | -            | -              |
| Computer Office Paper | CPO             | 11,811         | 16,023         | 27,834          | 57.6%            | -             | -             | -             | -            | -              |
| Food Cans             | FFER            | 1,695          | 1,857          | 3,552           | 52.3%            | 1,082         | -             | -             | -            | -              |
| Food                  | FOOD            | 54,324         | 81,510         | 135,834         | 60.0%            | -             | -             | 1,110         | -            | -              |
| Miscellaneous         | MISC            | 48,392         | 30,397         | 78,789          | 38.6%            | -             | -             | -             | -            | -              |
| Mixed Scrap Paper     | MWPP            | 16,428         | 53,718         | 70,147          | 76.6%            | 28,044        | -             | -             | -            | -              |
| Newspaper             | NP              | 8,963          | 40,095         | 49,058          | 81.7%            | 15,792        | -             | -             | -            | -              |
| Other Paper           | NRP             | 22,930         | 12,860         | 35,790          | 35.9%            | -             | -             | -             | -            | -              |
| Other Aluminum        | OALU            | 1,164          | -              | 1,164           | 0.0%             | -             | -             | -             | -            | -              |
| Corrugated Kraft      | OCC             | 18,757         | 66,462         | 85,219          | 78.0%            | 13,453        | -             | -             | -            | -              |
| Other Ferrous         | OFER            | 12,527         | 12,620         | 25,147          | 50.2%            | 630           | -             | -             | -            | -              |
| Other Glass           | OGLS            | 5,140          | 971            | 6,110           | 15.9%            | -             | -             | -             | -            | -              |
| Other NonFerrous      | ONFR            | 216            | -              | 216             | 0.0%             | -             | -             | -             | -            | -              |
| Other Organics        | OORG            | 39,766         | -              | 39,766          | 0.0%             | -             | -             | -             | -            | -              |
| Plastics              | PLST            | 49,331         | 9,087          | 58,419          | 15.6%            | 3,899         | -             | -             | -            | -              |
| Wood                  | WOOD            | 54,044         | 245            | 54,289          | 0.5%             | -             | -             | -             | -            | -              |
| Yard                  | YARD            | 10,736         | 99,540         | 110,276         | 90.3%            | -             | 2,624         | -             | 7,168        | 3,534          |
| <b>Total</b>          | <b>Grand Tc</b> | <b>388,547</b> | <b>453,480</b> | <b>842,027</b>  | <b>53.9%</b>     | <b>82,074</b> | <b>2,624</b>  | <b>1,110</b>  | <b>7,168</b> | <b>3,534</b>   |

(in tons per year)

| Year | Total Disposed | Total Recycled | Total Generated | Percent Recycled |
|------|----------------|----------------|-----------------|------------------|
|      | 1              | 2              | 3               | (2/3)            |
| 1997 | 453,787        | 362,386        | 816,174         | 44.4%            |
| 1998 | 457,598        | 362,613        | 820,212         | 44.2%            |
| 1999 | 477,433        | 374,866        | 852,299         | 44.0%            |
| 2000 | 476,131        | 317,693        | 793,825         | 40.0%            |
| 2001 | 475,270        | 307,623        | 782,894         | 39.3%            |
| 2002 | 462,996        | 305,426        | 768,422         | 39.7%            |
| 2003 | 458,010        | 283,646        | 741,656         | 38.2%            |
| 2004 | 458,405        | 321,656        | 780,061         | 41.2%            |
| 2005 | 440,876        | 348,864        | 789,740         | 44.2%            |
| 2006 | 438,380        | 397,993        | 836,373         | 47.6%            |
| 2007 | 438,845        | 409,280        | 848,125         | 48.3%            |
| 2008 | 394,607        | 395,000        | 789,607         | 50.0%            |
| 2009 | 351,688        | 367,735        | 719,423         | 51.1%            |
| 2010 | 383,438        | 397,226        | 780,664         | 50.9%            |
| 2011 | 382,112        | 401,074        | 783,186         | 51.2%            |
| 2012 | 378,194        | 411,105        | 789,299         | 52.1%            |
| 2013 | 372,560        | 419,271        | 791,832         | 52.9%            |
| 2014 | 368,427        | 425,896        | 794,323         | 53.6%            |
| 2015 | 366,081        | 429,617        | 795,698         | 54.0%            |
| 2016 | 365,894        | 432,174        | 798,068         | 54.2%            |
| 2017 | 367,094        | 435,370        | 802,464         | 54.3%            |
| 2018 | 368,556        | 436,282        | 804,837         | 54.2%            |
| 2019 | 370,133        | 436,938        | 807,071         | 54.1%            |
| 2020 | 372,307        | 438,387        | 810,694         | 54.1%            |
| 2021 | 375,451        | 441,386        | 816,837         | 54.0%            |
| 2022 | 378,636        | 444,317        | 822,953         | 54.0%            |
| 2023 | 381,876        | 447,305        | 829,180         | 53.9%            |
| 2024 | 385,174        | 450,355        | 835,530         | 53.9%            |
| 2025 | 388,547        | 453,480        | 842,027         | 53.9%            |
| 2026 | 391,952        | 456,628        | 848,581         | 53.8%            |
| 2027 | 395,363        | 459,780        | 855,143         | 53.8%            |
| 2028 | 398,800        | 463,030        | 861,830         | 53.7%            |
| 2029 | 402,275        | 466,353        | 868,628         | 53.7%            |
| 2030 | 405,864        | 469,783        | 875,647         | 53.6%            |

**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

| Material MSW          |                 | BY FW<br>Not City<br>7 | Curb/Apt<br>Org<br>8 | MF                       |               | Clean<br>Green<br>21 | ABC Ban<br>22 | Drop<br>Sites<br>23 | Com Priv<br>Rec<br>30 | Foodware<br>Rec/Comp<br>35 |
|-----------------------|-----------------|------------------------|----------------------|--------------------------|---------------|----------------------|---------------|---------------------|-----------------------|----------------------------|
|                       |                 |                        |                      | Univer<br>Org Serv<br>13 |               |                      |               |                     |                       |                            |
| Aluminum Beverage     | BALU            | -                      | -                    | -                        | -             | -                    | -             | 4                   | 885                   | -                          |
| Beverage Glass        | BGLS            | -                      | -                    | -                        | -             | -                    | -             | 537                 | 2,771                 | -                          |
| Construction Debris   | CDEB            | -                      | -                    | -                        | -             | -                    | 4,722         | -                   | -                     | -                          |
| Container Glass       | CGLS            | -                      | -                    | -                        | -             | -                    | -             | -                   | -                     | -                          |
| Computer Office Paper | CPO             | -                      | -                    | -                        | -             | -                    | -             | -                   | 16,023                | -                          |
| Food Cans             | FFER            | -                      | -                    | -                        | -             | -                    | -             | -                   | 775                   | -                          |
| Food                  | FOOD            | 1,715                  | 31,632               | 4,499                    | -             | -                    | -             | -                   | 35,055                | 7,498                      |
| Miscellaneous         | MISC            | -                      | -                    | -                        | -             | -                    | -             | 63                  | 30,334                | -                          |
| Mixed Scrap Paper     | MWP             | -                      | -                    | -                        | -             | -                    | -             | 477                 | 25,197                | -                          |
| Newspaper             | NP              | -                      | -                    | -                        | -             | -                    | -             | 385                 | 23,919                | -                          |
| Other Paper           | NRP             | -                      | 3,735                | 1,006                    | -             | -                    | -             | -                   | -                     | 8,119                      |
| Other Aluminum        | OALU            | -                      | -                    | -                        | -             | -                    | -             | -                   | -                     | -                          |
| Corrugated Kraft      | OCC             | -                      | -                    | -                        | -             | -                    | -             | 1,006               | 52,004                | -                          |
| Other Ferrous         | OFER            | -                      | -                    | -                        | -             | -                    | -             | 5,048               | 6,942                 | -                          |
| Other Glass           | OGLS            | -                      | -                    | -                        | -             | -                    | -             | -                   | 971                   | -                          |
| Other NonFerrous      | ONFR            | -                      | -                    | -                        | -             | -                    | -             | -                   | -                     | -                          |
| Other Organics        | OORG            | -                      | -                    | -                        | -             | -                    | -             | -                   | -                     | -                          |
| Plastics              | PLST            | -                      | -                    | -                        | -             | -                    | -             | 27                  | 4,407                 | 755                        |
| Wood                  | WOOD            | -                      | -                    | -                        | -             | -                    | -             | 245                 | -                     | -                          |
| Yard                  | YARD            | -                      | 51,235               | -                        | 14,081        | -                    | -             | -                   | 20,899                | -                          |
| <b>Total</b>          | <b>Grand Tc</b> | <b>1,715</b>           | <b>86,601</b>        | <b>5,505</b>             | <b>14,081</b> | <b>4,722</b>         | <b>7,792</b>  | <b>220,181</b>      | <b>16,373</b>         |                            |



**Summary - Program Sector Materials Diversion by Program**  
**Status Quo Year 2025 Single Family Sector**

| Material MSW          | Row Lab            | Total         | Total          | Total          | Percent           | Curb/Apt Rec<br>2 | BY YW In City<br>3 |
|-----------------------|--------------------|---------------|----------------|----------------|-------------------|-------------------|--------------------|
|                       |                    | Disposed<br>1 | Recycled<br>2  | Generated<br>3 | Recycled<br>(2/3) |                   |                    |
| Aluminum Beverage     | BALU               | 206           | 742            | 948            | 78.2%             | 742               | -                  |
| Beverage Glass        | BGLS               | 764           | 10,575         | 11,339         | 93.3%             | 10,575            | -                  |
| Construction Debris   | CDEB               | 815           | -              | 815            | 0.0%              | -                 | -                  |
| Container Glass       | CGLS               | 250           | 2,070          | 2,319          | 89.2%             | 2,070             | -                  |
| Computer Office Paper | CPO                | 653           | -              | 653            | 0.0%              | -                 | -                  |
| Food Cans             | FFER               | 437           | 835            | 1,272          | 65.7%             | 835               | -                  |
| Food                  | FOOD               | 12,249        | 30,291         | 42,540         | 71.2%             | -                 | -                  |
| Miscellaneous         | MISC               | 3,252         | -              | 3,252          | 0.0%              | -                 | -                  |
| Mixed Scrap Paper     | MWP                | 3,475         | 21,030         | 24,505         | 85.8%             | 21,030            | -                  |
| Newspaper             | NP                 | 466           | 11,923         | 12,388         | 96.2%             | 11,923            | -                  |
| Other Paper           | NRP                | 6,591         | 2,825          | 9,416          | 30.0%             | -                 | -                  |
| Other Aluminum        | OALU               | 348           | -              | 348            | 0.0%              | -                 | -                  |
| Corrugated Kraft      | OCC                | 821           | 8,790          | 9,611          | 91.5%             | 8,790             | -                  |
| Other Ferrous         | OFER               | 617           | 390            | 1,006          | 38.7%             | 390               | -                  |
| Other Glass           | OGLS               | 151           | -              | 151            | 0.0%              | -                 | -                  |
| Other NonFerrous      | ONFR               | 3             | -              | 3              | 0.0%              | -                 | -                  |
| Other Organics        | OORG               | 20,822        | -              | 20,822         | 0.0%              | -                 | -                  |
| Plastics              | PLST               | 7,711         | 2,970          | 10,681         | 27.8%             | 2,970             | -                  |
| Wood                  | WOOD               | 923           | -              | 923            | 0.0%              | -                 | -                  |
| Yard                  | YARD               | 922           | 63,067         | 63,989         | 98.6%             | -                 | 2,624              |
| <b>Total</b>          | <b>Grand Total</b> | <b>61,474</b> | <b>155,508</b> | <b>216,982</b> | <b>71.7%</b>      | <b>59,325</b>     | <b>2,624</b>       |

(in tons per year)

| Year | Total         | Total         | Total          | Percent           |
|------|---------------|---------------|----------------|-------------------|
|      | Disposed<br>1 | Recycled<br>2 | Generated<br>3 | Recycled<br>(2/3) |
| 1997 | 88,783        | 137,555       | 226,337        | 60.8%             |
| 1998 | 87,560        | 137,686       | 225,247        | 61.1%             |
| 1999 | 88,631        | 141,956       | 230,586        | 61.6%             |
| 2000 | 87,499        | 120,969       | 208,468        | 58.0%             |
| 2001 | 91,072        | 120,910       | 211,982        | 57.0%             |
| 2002 | 87,834        | 118,640       | 206,474        | 57.5%             |
| 2003 | 87,426        | 118,322       | 205,748        | 57.5%             |
| 2004 | 86,029        | 123,103       | 209,132        | 58.9%             |
| 2005 | 80,479        | 128,197       | 208,676        | 61.4%             |
| 2006 | 78,078        | 138,810       | 216,889        | 64.0%             |
| 2007 | 77,494        | 142,634       | 220,127        | 64.8%             |
| 2008 | 73,961        | 139,928       | 213,889        | 65.4%             |
| 2009 | 67,229        | 147,786       | 215,015        | 68.7%             |
| 2010 | 67,893        | 151,706       | 219,599        | 69.1%             |
| 2011 | 66,550        | 151,809       | 218,360        | 69.5%             |
| 2012 | 64,757        | 152,556       | 217,314        | 70.2%             |
| 2013 | 62,911        | 153,124       | 216,035        | 70.9%             |
| 2014 | 61,597        | 153,167       | 214,764        | 71.3%             |
| 2015 | 60,803        | 152,762       | 213,565        | 71.5%             |
| 2016 | 60,449        | 152,520       | 212,970        | 71.6%             |
| 2017 | 60,858        | 153,802       | 214,661        | 71.6%             |
| 2018 | 60,529        | 153,063       | 213,592        | 71.7%             |
| 2019 | 60,172        | 152,194       | 212,366        | 71.7%             |
| 2020 | 59,893        | 151,501       | 211,394        | 71.7%             |
| 2021 | 60,184        | 152,241       | 212,424        | 71.7%             |
| 2022 | 60,474        | 152,977       | 213,451        | 71.7%             |
| 2023 | 60,796        | 153,794       | 214,590        | 71.7%             |
| 2024 | 61,130        | 154,637       | 215,766        | 71.7%             |
| 2025 | 61,474        | 155,508       | 216,982        | 71.7%             |
| 2026 | 61,811        | 156,360       | 218,171        | 71.7%             |
| 2027 | 62,147        | 157,210       | 219,357        | 71.7%             |
| 2028 | 62,501        | 158,105       | 220,606        | 71.7%             |
| 2029 | 62,869        | 159,037       | 221,906        | 71.7%             |
| 2030 | 63,272        | 160,056       | 223,328        | 71.7%             |

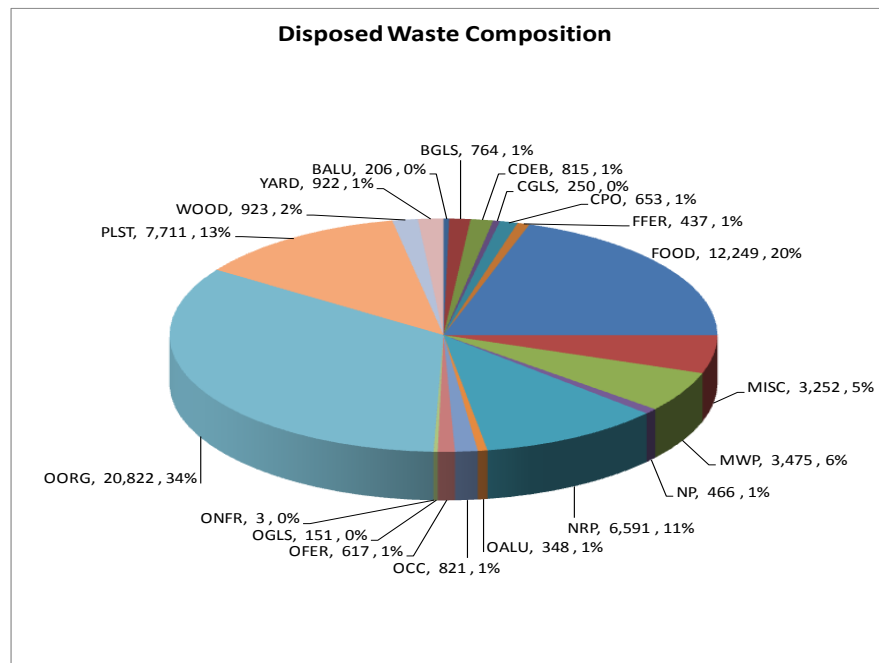


**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

| Material MSW          | Row Lab            | BY FW In City<br>4 | Grasscycle<br>5 | BY YW Not City<br>6 | BY FW Not City<br>7 | Curb/Apt Org<br>8 |
|-----------------------|--------------------|--------------------|-----------------|---------------------|---------------------|-------------------|
| Aluminum Beverage     | BALU               | -                  | -               | -                   | -                   | -                 |
| Beverage Glass        | BGLS               | -                  | -               | -                   | -                   | -                 |
| Construction Debris   | CDEB               | -                  | -               | -                   | -                   | -                 |
| Container Glass       | CGLS               | -                  | -               | -                   | -                   | -                 |
| Computer Office Paper | CPO                | -                  | -               | -                   | -                   | -                 |
| Food Cans             | FFER               | -                  | -               | -                   | -                   | -                 |
| Food                  | FOOD               | 1,110              | -               | -                   | 1,715               | 27,466            |
| Miscellaneous         | MISC               | -                  | -               | -                   | -                   | -                 |
| Mixed Scrap Paper     | MWP                | -                  | -               | -                   | -                   | -                 |
| Newspaper             | NP                 | -                  | -               | -                   | -                   | -                 |
| Other Paper           | NRP                | -                  | -               | -                   | -                   | 2,825             |
| Other Aluminum        | OALU               | -                  | -               | -                   | -                   | -                 |
| Corrugated Kraft      | OCC                | -                  | -               | -                   | -                   | -                 |
| Other Ferrous         | OFER               | -                  | -               | -                   | -                   | -                 |
| Other Glass           | OGLS               | -                  | -               | -                   | -                   | -                 |
| Other NonFerrous      | ONFR               | -                  | -               | -                   | -                   | -                 |
| Other Organics        | OORG               | -                  | -               | -                   | -                   | -                 |
| Plastics              | PLST               | -                  | -               | -                   | -                   | -                 |
| Wood                  | WOOD               | -                  | -               | -                   | -                   | -                 |
| Yard                  | YARD               | -                  | 7,168           | 3,534               | -                   | 49,743            |
| <b>Total</b>          | <b>Grand Total</b> | <b>1,110</b>       | <b>7,168</b>    | <b>3,534</b>        | <b>1,715</b>        | <b>80,033</b>     |

(ii)

| Year |
|------|
| 1997 |
| 1998 |
| 1999 |
| 2000 |
| 2001 |
| 2002 |
| 2003 |
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| 2025 |
| 2026 |
| 2027 |
| 2028 |
| 2029 |
| 2030 |



**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

**Summary - Program Sector Materials Diversion by Program**

**Status Quo Year 2025 Multi Family Sector**

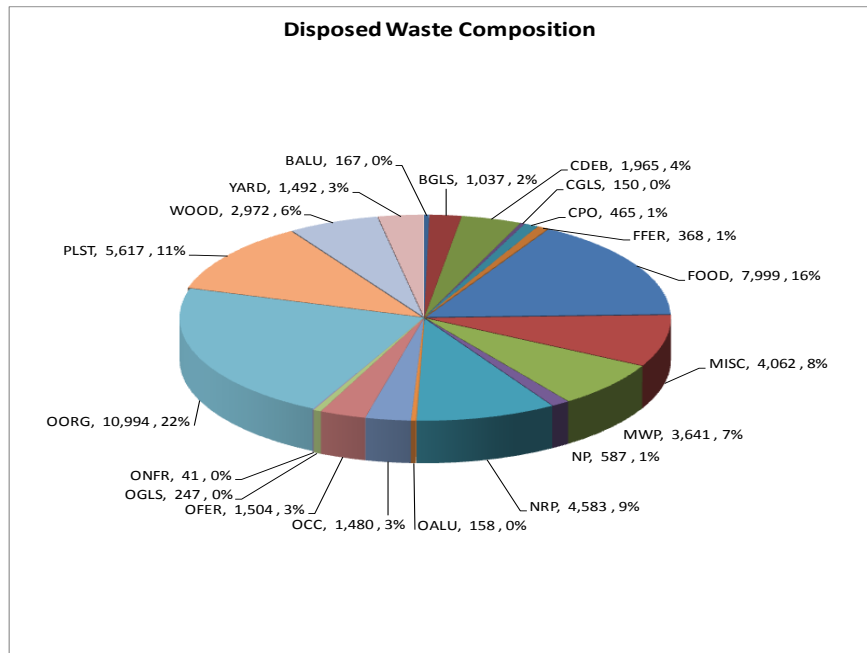
| Material MSW          | Row Lat        | Total         | Total         | Total         | Percent      | Curb/Apt Rec  | Curb/Apt Org |
|-----------------------|----------------|---------------|---------------|---------------|--------------|---------------|--------------|
|                       |                | Disposed      | Recycled      | Generated     | Recycled     |               |              |
|                       |                | 1             | 2             | 3             | (2/3)        | 2             | 8            |
| Aluminum Beverage     | BALU           | 167           | 224           | 391           | 57.2%        | 224           | -            |
| Beverage Glass        | BGLS           | 1,037         | 4,655         | 5,692         | 81.8%        | 4,655         | -            |
| Construction Debris   | CDEB           | 1,965         | -             | 1,965         | 0.0%         | -             | -            |
| Container Glass       | CGLS           | 150           | 911           | 1,061         | 85.8%        | 911           | -            |
| Computer Office Paper | CPO            | 465           | -             | 465           | 0.0%         | -             | -            |
| Food Cans             | FFER           | 368           | 246           | 615           | 40.1%        | 246           | -            |
| Food                  | FOOD           | 7,999         | 8,665         | 16,664        | 52.0%        | -             | 4,166        |
| Miscellaneous         | MISC           | 4,062         | -             | 4,062         | 0.0%         | -             | -            |
| Mixed Scrap Paper     | MWP            | 3,641         | 7,014         | 10,655        | 65.8%        | 7,014         | -            |
| Newspaper             | NP             | 587           | 3,869         | 4,456         | 86.8%        | 3,869         | -            |
| Other Paper           | NRP            | 4,583         | 1,916         | 6,499         | 29.5%        | -             | 910          |
| Other Aluminum        | OALU           | 158           | -             | 158           | 0.0%         | -             | -            |
| Corrugated Kraft      | OCC            | 1,480         | 4,662         | 6,143         | 75.9%        | 4,662         | -            |
| Other Ferrous         | OFER           | 1,504         | 240           | 1,744         | 13.8%        | 240           | -            |
| Other Glass           | OGLS           | 247           | -             | 247           | 0.0%         | -             | -            |
| Other NonFerrous      | ONFR           | 41            | -             | 41            | 0.0%         | -             | -            |
| Other Organics        | OORG           | 10,994        | -             | 10,994        | 0.0%         | -             | -            |
| Plastics              | PLST           | 5,617         | 928           | 6,545         | 14.2%        | 928           | -            |
| Wood                  | WOOD           | 2,972         | -             | 2,972         | 0.0%         | -             | -            |
| Yard                  | YARD           | 1,492         | 1,492         | 2,985         | 50.0%        | -             | 1,492        |
| <b>Total</b>          | <b>Grand T</b> | <b>49,530</b> | <b>34,823</b> | <b>84,353</b> | <b>41.3%</b> | <b>22,750</b> | <b>6,568</b> |

| Year | Total    | Total    | Total     | Percent  |
|------|----------|----------|-----------|----------|
|      | Disposed | Recycled | Generated | Recycled |
|      | 1        | 2        | 3         | (2/3)    |
| 1997 | 59,189   | 11,371   | 70,560    | 16.1%    |
| 1998 | 58,374   | 12,266   | 70,640    | 17.4%    |
| 1999 | 59,087   | 12,639   | 71,726    | 17.6%    |
| 2000 | 58,333   | 12,595   | 70,927    | 17.8%    |
| 2001 | 53,487   | 15,124   | 68,611    | 22.0%    |
| 2002 | 55,076   | 15,068   | 70,144    | 21.5%    |
| 2003 | 56,106   | 16,043   | 72,149    | 22.2%    |
| 2004 | 56,498   | 16,142   | 72,640    | 22.2%    |
| 2005 | 54,080   | 18,245   | 72,325    | 25.2%    |
| 2006 | 55,643   | 19,903   | 75,545    | 26.3%    |
| 2007 | 55,759   | 21,261   | 77,020    | 27.6%    |
| 2008 | 53,199   | 21,024   | 74,223    | 28.3%    |
| 2009 | 51,497   | 19,028   | 70,524    | 27.0%    |
| 2010 | 52,955   | 19,813   | 72,767    | 27.2%    |
| 2011 | 52,950   | 20,140   | 73,090    | 27.6%    |
| 2012 | 51,153   | 22,317   | 73,469    | 30.4%    |
| 2013 | 49,370   | 24,391   | 73,761    | 33.1%    |
| 2014 | 47,450   | 26,596   | 74,046    | 35.9%    |
| 2015 | 45,919   | 28,429   | 74,347    | 38.2%    |
| 2016 | 45,138   | 29,846   | 74,985    | 39.8%    |
| 2017 | 45,205   | 30,969   | 76,174    | 40.7%    |
| 2018 | 45,267   | 31,506   | 76,773    | 41.0%    |
| 2019 | 45,397   | 31,796   | 77,193    | 41.2%    |
| 2020 | 45,653   | 32,052   | 77,705    | 41.2%    |
| 2021 | 46,375   | 32,588   | 78,963    | 41.3%    |
| 2022 | 47,118   | 33,121   | 80,238    | 41.3%    |
| 2023 | 47,900   | 33,675   | 81,575    | 41.3%    |
| 2024 | 48,704   | 34,242   | 82,946    | 41.3%    |
| 2025 | 49,530   | 34,823   | 84,353    | 41.3%    |
| 2026 | 50,363   | 35,409   | 85,771    | 41.3%    |
| 2027 | 51,207   | 36,002   | 87,209    | 41.3%    |
| 2028 | 52,079   | 36,615   | 88,695    | 41.3%    |
| 2029 | 52,977   | 37,247   | 90,223    | 41.3%    |
| 2030 | 53,918   | 37,908   | 91,826    | 41.3%    |

**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

| Material MSW          | MF Univer Org Serv | Row Lat      | 13 |
|-----------------------|--------------------|--------------|----|
| Aluminum Beverage     | BALU               | -            |    |
| Beverage Glass        | BGLS               | -            |    |
| Construction Debris   | CDEB               | -            |    |
| Container Glass       | CGLS               | -            |    |
| Computer Office Paper | CPO                | -            |    |
| Food Cans             | FFER               | -            |    |
| Food                  | FOOD               | 4,499        |    |
| Miscellaneous         | MISC               | -            |    |
| Mixed Scrap Paper     | MWP                | -            |    |
| Newspaper             | NP                 | -            |    |
| Other Paper           | NRP                | 1,006        |    |
| Other Aluminum        | OALU               | -            |    |
| Corrugated Kraft      | OCC                | -            |    |
| Other Ferrous         | OFER               | -            |    |
| Other Glass           | OGLS               | -            |    |
| Other NonFerrous      | ONFR               | -            |    |
| Other Organics        | OORG               | -            |    |
| Plastics              | PLST               | -            |    |
| Wood                  | WOOD               | -            |    |
| Yard                  | YARD               | -            |    |
| <b>Total</b>          | <b>Grand T</b>     | <b>5,505</b> |    |

| Year |
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| 2021 |
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| 2024 |
| 2025 |
| 2026 |
| 2027 |
| 2028 |
| 2029 |
| 2030 |



**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

**Summary - Program Sector Materials Diversion by Program  
Status Quo Year 2025 Commercial Sector**

| Material MSW          | Row Lab         | Total          | Total          | Total          | Percent      | Com Priv Rec   | Foodware<br>Rec/Comp |
|-----------------------|-----------------|----------------|----------------|----------------|--------------|----------------|----------------------|
|                       |                 | Disposed       | Recycled       | Generated      | Recycled     |                |                      |
|                       |                 | 1              | 2              | 3              | (2/3)        | 30             | 35                   |
| Aluminum Beverage     | BALU            | 736            | 885            | 1,620          | 54.6%        | 885            | -                    |
| Beverage Glass        | BGLS            | 2,433          | 2,771          | 5,204          | 53.2%        | 2,771          | -                    |
| Construction Debris   | CDEB            | 6,325          | -              | 6,325          | 0.0%         | -              | -                    |
| Container Glass       | CGLS            | 175            | -              | 175            | 0.0%         | -              | -                    |
| Computer Office Paper | CPO             | 9,862          | 16,023         | 25,886         | 61.9%        | 16,023         | -                    |
| Food Cans             | FFER            | 826            | 775            | 1,601          | 48.4%        | 775            | -                    |
| Food                  | FOOD            | 31,193         | 42,553         | 73,746         | 57.7%        | 35,055         | 7,498                |
| Miscellaneous         | MISC            | 16,927         | 30,334         | 47,260         | 64.2%        | 30,334         | -                    |
| Mixed Scrap Paper     | MWP             | 7,536          | 25,197         | 32,733         | 77.0%        | 25,197         | -                    |
| Newspaper             | NP              | 7,907          | 23,919         | 31,825         | 75.2%        | 23,919         | -                    |
| Other Paper           | NRP             | 10,230         | 8,119          | 18,349         | 44.2%        | -              | 8,119                |
| Other Aluminum        | OALU            | 499            | -              | 499            | 0.0%         | -              | -                    |
| Corrugated Kraft      | OCC             | 13,723         | 52,004         | 65,727         | 79.1%        | 52,004         | -                    |
| Other Ferrous         | OFER            | 5,479          | 6,942          | 12,421         | 55.9%        | 6,942          | -                    |
| Other Glass           | OGLS            | 3,009          | 971            | 3,980          | 24.4%        | 971            | -                    |
| Other NonFerrous      | ONFR            | 43             | -              | 43             | 0.0%         | -              | -                    |
| Other Organics        | OORG            | 5,094          | -              | 5,094          | 0.0%         | -              | -                    |
| Plastics              | PLST            | 29,765         | 5,162          | 34,927         | 14.8%        | 4,407          | 755                  |
| Wood                  | WOOD            | 12,749         | -              | 12,749         | 0.0%         | -              | -                    |
| Yard                  | YARD            | 3,802          | 20,899         | 24,701         | 84.6%        | 20,899         | -                    |
| <b>Total</b>          | <b>Grand Tc</b> | <b>168,312</b> | <b>236,554</b> | <b>404,866</b> | <b>58.4%</b> | <b>220,181</b> | <b>16,373</b>        |

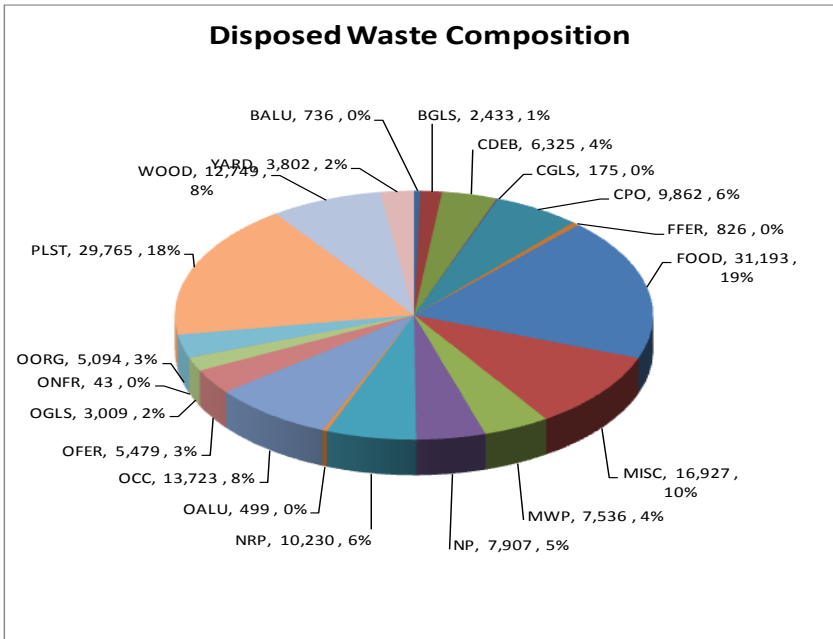
(in tons per year)

| Year | Total    | Total    | Total     | Percent  |
|------|----------|----------|-----------|----------|
|      | Disposed | Recycled | Generated | Recycled |
|      | 1        | 2        | 3         | (2/3)    |
| 1997 | 208,670  | 194,323  | 402,994   | 48.2%    |
| 1998 | 213,646  | 194,251  | 407,896   | 47.6%    |
| 1999 | 225,348  | 199,968  | 425,316   | 47.0%    |
| 2000 | 228,417  | 162,989  | 391,405   | 41.6%    |
| 2001 | 228,405  | 149,453  | 377,858   | 39.6%    |
| 2002 | 217,195  | 149,025  | 366,220   | 40.7%    |
| 2003 | 213,247  | 126,956  | 340,202   | 37.3%    |
| 2004 | 216,112  | 159,341  | 375,453   | 42.4%    |
| 2005 | 205,819  | 179,265  | 385,083   | 46.6%    |
| 2006 | 201,231  | 215,258  | 416,489   | 51.7%    |
| 2007 | 198,493  | 219,894  | 418,387   | 52.6%    |
| 2008 | 176,774  | 213,493  | 390,267   | 54.7%    |
| 2009 | 151,398  | 184,593  | 335,992   | 54.9%    |
| 2010 | 171,363  | 207,450  | 378,813   | 54.8%    |
| 2011 | 169,610  | 210,521  | 380,131   | 55.4%    |
| 2012 | 167,487  | 216,002  | 383,489   | 56.3%    |
| 2013 | 164,278  | 220,182  | 384,460   | 57.3%    |
| 2014 | 162,467  | 223,302  | 385,769   | 57.9%    |
| 2015 | 161,600  | 224,815  | 386,415   | 58.2%    |
| 2016 | 161,450  | 225,753  | 387,203   | 58.3%    |
| 2017 | 161,556  | 226,369  | 387,925   | 58.4%    |
| 2018 | 161,985  | 227,170  | 389,155   | 58.4%    |
| 2019 | 162,600  | 228,119  | 390,718   | 58.4%    |
| 2020 | 163,633  | 229,723  | 393,356   | 58.4%    |
| 2021 | 164,609  | 231,166  | 395,775   | 58.4%    |
| 2022 | 165,531  | 232,529  | 398,060   | 58.4%    |
| 2023 | 166,430  | 233,845  | 400,275   | 58.4%    |
| 2024 | 167,354  | 235,184  | 402,538   | 58.4%    |
| 2025 | 168,312  | 236,554  | 404,866   | 58.4%    |
| 2026 | 169,306  | 237,962  | 407,268   | 58.4%    |
| 2027 | 170,303  | 239,371  | 409,674   | 58.4%    |
| 2028 | 171,321  | 240,822  | 412,143   | 58.4%    |
| 2029 | 172,361  | 242,297  | 414,658   | 58.4%    |
| 2030 | 173,392  | 243,750  | 417,142   | 58.4%    |

**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

| Material MSW          |                 |
|-----------------------|-----------------|
|                       | Row Lab         |
| Aluminum Beverage     | BALU            |
| Beverage Glass        | BGLS            |
| Construction Debris   | CDEB            |
| Container Glass       | CGLS            |
| Computer Office Paper | CPO             |
| Food Cans             | FFER            |
| Food                  | FOOD            |
| Miscellaneous         | MISC            |
| Mixed Scrap Paper     | MWP             |
| Newspaper             | NP              |
| Other Paper           | NRP             |
| Other Aluminum        | OALU            |
| Corrugated Kraft      | OCC             |
| Other Ferrous         | OFER            |
| Other Glass           | OGLS            |
| Other NonFerrous      | ONFR            |
| Other Organics        | OORG            |
| Plastics              | PLST            |
| Wood                  | WOOD            |
| Yard                  | YARD            |
| <b>Total</b>          | <b>Grand Tt</b> |

| Year |
|------|
| 1997 |
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| 2029 |
| 2030 |



Summary - Program Sector Materials Diversion by Program  
 Status Quo Year 2025 Self Haul Sector

| Material MSW          | Row Label          | Total          | Total         | Total          | Percent      | Clean Green   | Drop Sites   | ABC Ban      |
|-----------------------|--------------------|----------------|---------------|----------------|--------------|---------------|--------------|--------------|
|                       |                    | Disposed       | Recycled      | Generated      | Recycled     |               |              |              |
|                       |                    | 1              | 2             | 3              | (2/3)        | 21            | 23           | 22           |
| Aluminum Beverage     | BALU               | 69             | 4             | 73             | 5.9%         | -             | 4            | -            |
| Beverage Glass        | BGLS               | 285            | 537           | 822            | 65.3%        | -             | 537          | -            |
| Construction Debris   | CDEB               | 16,889         | 4,722         | 21,611         | 21.8%        | -             | -            | 4,722        |
| Container Glass       | CGLS               | 57             | -             | 57             | 0.0%         | -             | -            | -            |
| Computer Office Paper | CPO                | 830            | -             | 830            | 0.0%         | -             | -            | -            |
| Food Cans             | FFER               | 65             | -             | 65             | 0.0%         | -             | -            | -            |
| Food                  | FOOD               | 2,883          | -             | 2,883          | 0.0%         | -             | -            | -            |
| Miscellaneous         | MISC               | 24,151         | 63            | 24,215         | 0.3%         | -             | 63           | -            |
| Mixed Scrap Paper     | MWP                | 1,777          | 477           | 2,253          | 21.2%        | -             | 477          | -            |
| Newspaper             | NP                 | 3              | 385           | 388            | 99.3%        | -             | 385          | -            |
| Other Paper           | NRP                | 1,526          | -             | 1,526          | 0.0%         | -             | -            | -            |
| Other Aluminum        | OALU               | 160            | -             | 160            | 0.0%         | -             | -            | -            |
| Corrugated Kraft      | OCC                | 2,733          | 1,006         | 3,739          | 26.9%        | -             | 1,006        | -            |
| Other Ferrous         | OFER               | 4,928          | 5,048         | 9,976          | 50.6%        | -             | 5,048        | -            |
| Other Glass           | OGLS               | 1,733          | -             | 1,733          | 0.0%         | -             | -            | -            |
| Other NonFerrous      | ONFR               | 129            | -             | 129            | 0.0%         | -             | -            | -            |
| Other Organics        | OORG               | 2,857          | -             | 2,857          | 0.0%         | -             | -            | -            |
| Plastics              | PLST               | 6,238          | 27            | 6,265          | 0.4%         | -             | 27           | -            |
| Wood                  | WOOD               | 37,400         | 245           | 37,644         | 0.6%         | -             | 245          | -            |
| Yard                  | YARD               | 4,520          | 14,081        | 18,601         | 75.7%        | 14,081        | -            | -            |
| <b>Total</b>          | <b>Grand Total</b> | <b>109,231</b> | <b>26,595</b> | <b>135,826</b> | <b>19.6%</b> | <b>14,081</b> | <b>7,792</b> | <b>4,722</b> |

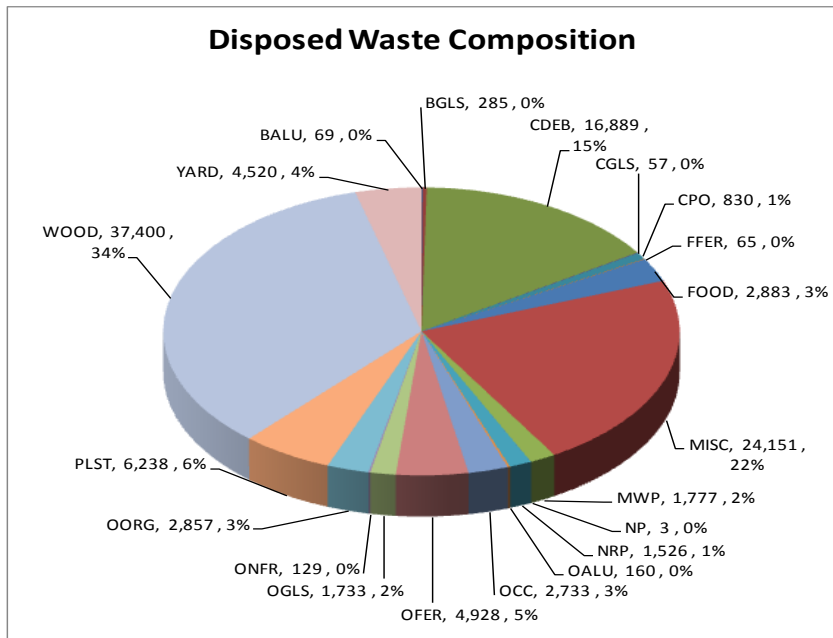
(in tons per year)

| Year | Total    | Total    | Total     | Percent  |
|------|----------|----------|-----------|----------|
|      | Disposed | Recycled | Generated | Recycled |
|      | 1        | 2        | 3         | (2/3)    |
| 1997 | 97,146   | 19,137   | 116,283   | 16.5%    |
| 1998 | 98,019   | 18,410   | 116,429   | 15.8%    |
| 1999 | 104,367  | 20,304   | 124,671   | 16.3%    |
| 2000 | 101,883  | 21,141   | 123,024   | 17.2%    |
| 2001 | 102,305  | 22,137   | 124,442   | 17.8%    |
| 2002 | 102,891  | 22,693   | 125,584   | 18.1%    |
| 2003 | 101,232  | 22,325   | 123,557   | 18.1%    |
| 2004 | 99,766   | 23,070   | 122,836   | 18.8%    |
| 2005 | 100,499  | 23,157   | 123,656   | 18.7%    |
| 2006 | 103,428  | 24,022   | 127,450   | 18.8%    |
| 2007 | 107,098  | 25,492   | 132,591   | 19.2%    |
| 2008 | 90,673   | 20,556   | 111,229   | 18.5%    |
| 2009 | 81,565   | 16,328   | 97,893    | 16.7%    |
| 2010 | 91,226   | 18,257   | 109,484   | 16.7%    |
| 2011 | 93,001   | 18,604   | 111,605   | 16.7%    |
| 2012 | 94,797   | 20,230   | 115,027   | 17.6%    |
| 2013 | 96,002   | 21,574   | 117,576   | 18.3%    |
| 2014 | 96,914   | 22,831   | 119,745   | 19.1%    |
| 2015 | 97,759   | 23,611   | 121,371   | 19.5%    |
| 2016 | 98,857   | 24,054   | 122,911   | 19.6%    |
| 2017 | 99,475   | 24,229   | 123,704   | 19.6%    |
| 2018 | 100,774  | 24,542   | 125,317   | 19.6%    |
| 2019 | 101,965  | 24,829   | 126,794   | 19.6%    |
| 2020 | 103,128  | 25,110   | 128,239   | 19.6%    |
| 2021 | 104,283  | 25,391   | 129,674   | 19.6%    |
| 2022 | 105,514  | 25,690   | 131,204   | 19.6%    |
| 2023 | 106,749  | 25,991   | 132,740   | 19.6%    |
| 2024 | 107,986  | 26,292   | 134,279   | 19.6%    |
| 2025 | 109,231  | 26,595   | 135,826   | 19.6%    |
| 2026 | 110,473  | 26,898   | 137,370   | 19.6%    |
| 2027 | 111,706  | 27,198   | 138,904   | 19.6%    |
| 2028 | 112,899  | 27,488   | 140,387   | 19.6%    |
| 2029 | 114,068  | 27,773   | 141,841   | 19.6%    |
| 2030 | 115,282  | 28,069   | 143,351   | 19.6%    |

**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

| Material MSW          |                    |
|-----------------------|--------------------|
|                       | Row Label          |
| Aluminum Beverage     | BALU               |
| Beverage Glass        | BGLS               |
| Construction Debris   | CDEB               |
| Container Glass       | CGLS               |
| Computer Office Paper | CPO                |
| Food Cans             | FFER               |
| Food                  | FOOD               |
| Miscellaneous         | MISC               |
| Mixed Scrap Paper     | MWP                |
| Newspaper             | NP                 |
| Other Paper           | NRP                |
| Other Aluminum        | OALU               |
| Corrugated Kraft      | OCC                |
| Other Ferrous         | OFER               |
| Other Glass           | OGLS               |
| Other NonFerrous      | ONFR               |
| Other Organics        | OORG               |
| Plastics              | PLST               |
| Wood                  | WOOD               |
| Yard                  | YARD               |
| <b>Total</b>          | <b>Grand Total</b> |

| Year |
|------|
| 1997 |
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**Summary of Recycling Program Benefits and Costs  
Status Quo Newest Programs**

**All Programs in Scenario**

| Year                                  | Present Value               | 2010         | 2011         | 2012          | 2013          | 2014          |
|---------------------------------------|-----------------------------|--------------|--------------|---------------|---------------|---------------|
| Program Benefits                      | \$17,279,271                | \$116,013    | \$262,341    | \$773,665     | \$1,241,656   | \$1,616,495   |
| Program Cost                          | \$15,393,862                | \$431,561    | \$807,500    | \$1,100,735   | \$1,090,861   | \$1,366,545   |
| Net Benefits                          | \$1,885,409                 | (\$315,548)  | (\$545,159)  | (\$327,070)   | \$150,795     | \$249,950     |
| <b>Tons avoided through recycling</b> | <b>470,280</b>              | <b>1,840</b> | <b>4,161</b> | <b>10,516</b> | <b>16,485</b> | <b>21,123</b> |
| 4/1/11 5:00 PM                        | (All costs in 2010 dollars) |              |              |               |               |               |

**13 MF Univer Org Serv**

| Year                                  | Present Value | 2010     | 2011         | 2012         | 2013         | 2014         |
|---------------------------------------|---------------|----------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$6,239,071   | \$ -     | \$ -         | \$ 228,037   | \$ 418,673   | \$ 593,199   |
| Program Cost                          | \$3,389,494   | \$ -     | \$ 200,000   | \$ 212,001   | \$ 213,632   | \$ 299,351   |
| Net Benefits                          | \$2,849,577   | \$ -     | \$ (200,000) | \$ 16,036    | \$ 205,041   | \$ 293,848   |
| <b>Tons avoided through recycling</b> | <b>94,700</b> | <b>-</b> | <b>-</b>     | <b>1,647</b> | <b>3,024</b> | <b>4,285</b> |
| PV per ton                            | \$30          |          |              |              |              |              |

**22 ABC Ban**

| Year                                  | Present Value | 2010     | 2011        | 2012         | 2013         | 2014         |
|---------------------------------------|---------------|----------|-------------|--------------|--------------|--------------|
| Program Benefits                      | \$1,871,710   | \$ -     | \$ -        | \$ 54,257    | \$ 103,107   | \$ 153,534   |
| Program Cost                          | \$814,148     | \$ -     | \$ 10,000   | \$ 31,509    | \$ 50,875    | \$ 70,866    |
| Net Benefits                          | \$1,057,561   | \$ -     | \$ (10,000) | \$ 22,748    | \$ 52,232    | \$ 82,668    |
| <b>Tons avoided through recycling</b> | <b>78,822</b> | <b>-</b> | <b>-</b>    | <b>1,075</b> | <b>2,044</b> | <b>3,043</b> |
| PV per ton                            | \$13          |          |             |              |              |              |

**35 Foodware Rec/Com**

| Year                                  | Present Value  | 2010         | 2011         | 2012         | 2013          | 2014          |
|---------------------------------------|----------------|--------------|--------------|--------------|---------------|---------------|
| Program Benefits                      | \$9,168,490    | \$ 116,013   | \$ 262,341   | \$ 491,371   | \$ 719,876    | \$ 869,762    |
| Program Cost                          | \$11,190,220   | \$ 431,561   | \$ 597,500   | \$ 857,225   | \$ 826,354    | \$ 996,328    |
| Net Benefits                          | (\$2,021,729)  | \$ (315,548) | \$ (335,159) | \$ (365,854) | \$ (106,478)  | \$ (126,566)  |
| <b>Tons avoided through recycling</b> | <b>296,758</b> | <b>1,840</b> | <b>4,161</b> | <b>7,793</b> | <b>11,418</b> | <b>13,795</b> |
| PV per ton                            | (\$7)          |              |              |              |               |               |



**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

**All Programs in Scenario**

| Year                                  | 2015          | 2016          | 2017          | 2018          | 2019          | 2020          |
|---------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Program Benefits                      | \$1,807,319   | \$1,873,985   | \$1,897,780   | \$1,909,129   | \$1,918,579   | \$1,934,296   |
| Program Cost                          | \$1,503,495   | \$1,554,277   | \$1,568,364   | \$1,577,861   | \$1,585,448   | \$1,598,937   |
| Net Benefits                          | \$303,825     | \$319,708     | \$329,416     | \$331,268     | \$333,131     | \$335,359     |
| <b>Tons avoided through recycling</b> | <b>23,553</b> | <b>24,524</b> | <b>24,903</b> | <b>25,110</b> | <b>25,267</b> | <b>25,498</b> |

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**13 MF Univer Org Serv**

| Year                                  | 2015         | 2016         | 2017         | 2018         | 2019         | 2020         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$ 677,821   | \$ 695,942   | \$ 699,378   | \$ 698,591   | \$ 699,429   | \$ 702,868   |
| Program Cost                          | \$ 340,913   | \$ 349,813   | \$ 351,501   | \$ 351,114   | \$ 351,526   | \$ 353,215   |
| Net Benefits                          | \$ 336,908   | \$ 346,129   | \$ 347,877   | \$ 347,476   | \$ 347,903   | \$ 349,653   |
| <b>Tons avoided through recycling</b> | <b>4,896</b> | <b>5,027</b> | <b>5,051</b> | <b>5,046</b> | <b>5,052</b> | <b>5,077</b> |

PV per ton

**22 ABC Ban**

| Year                                  | 2015         | 2016         | 2017         | 2018         | 2019         | 2020         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$ 187,493   | \$ 205,347   | \$ 213,059   | \$ 218,318   | \$ 221,829   | \$ 224,709   |
| Program Cost                          | \$ 84,328    | \$ 91,406    | \$ 89,463    | \$ 91,548    | \$ 92,940    | \$ 94,082    |
| Net Benefits                          | \$ 103,165   | \$ 113,941   | \$ 123,595   | \$ 126,770   | \$ 128,889   | \$ 130,627   |
| <b>Tons avoided through recycling</b> | <b>3,716</b> | <b>4,070</b> | <b>4,223</b> | <b>4,327</b> | <b>4,397</b> | <b>4,454</b> |

PV per ton

**35 Foodware Rec/Com**

| Year                                  | 2015          | 2016          | 2017          | 2018          | 2019          | 2020          |
|---------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Program Benefits                      | \$ 942,005    | \$ 972,696    | \$ 985,344    | \$ 992,220    | \$ 997,320    | \$ 1,006,719  |
| Program Cost                          | \$ 1,078,253  | \$ 1,113,057  | \$ 1,127,400  | \$ 1,135,198  | \$ 1,140,982  | \$ 1,151,640  |
| Net Benefits                          | \$ (136,248)  | \$ (140,361)  | \$ (142,056)  | \$ (142,978)  | \$ (143,661)  | \$ (144,921)  |
| <b>Tons avoided through recycling</b> | <b>14,941</b> | <b>15,427</b> | <b>15,628</b> | <b>15,737</b> | <b>15,818</b> | <b>15,967</b> |

PV per ton

**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

**All Programs in Scenario**

| Year             | 2021        | 2022        | 2023        | 2024        | 2025        | 2026        |
|------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Program Benefits | \$1,953,405 | \$1,972,659 | \$1,992,267 | \$2,012,292 | \$2,032,766 | \$2,053,537 |
| Program Cost     | \$1,661,639 | \$1,624,161 | \$1,636,672 | \$1,649,437 | \$1,662,484 | \$1,675,805 |
| Net Benefits     | \$291,766   | \$348,498   | \$355,595   | \$362,855   | \$370,282   | \$377,732   |

|                                       |               |               |               |               |               |               |
|---------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| <b>Tons avoided through recycling</b> | <b>25,717</b> | <b>25,935</b> | <b>26,153</b> | <b>26,375</b> | <b>26,600</b> | <b>26,830</b> |
|---------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|

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**13 MF Univer Org Serv**

| Year             | 2021       | 2022       | 2023       | 2024       | 2025       | 2026       |
|------------------|------------|------------|------------|------------|------------|------------|
| Program Benefits | \$ 713,784 | \$ 725,135 | \$ 737,150 | \$ 749,515 | \$ 762,220 | \$ 775,030 |
| Program Cost     | \$ 408,576 | \$ 364,152 | \$ 370,053 | \$ 376,126 | \$ 382,366 | \$ 388,657 |
| Net Benefits     | \$ 305,207 | \$ 360,983 | \$ 367,097 | \$ 373,389 | \$ 379,854 | \$ 386,372 |

|                                       |              |              |              |              |              |              |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Tons avoided through recycling</b> | <b>5,156</b> | <b>5,238</b> | <b>5,324</b> | <b>5,414</b> | <b>5,505</b> | <b>5,598</b> |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|

PV per ton

**22 ABC Ban**

| Year             | 2021       | 2022       | 2023       | 2024       | 2025       | 2026       |
|------------------|------------|------------|------------|------------|------------|------------|
| Program Benefits | \$ 227,354 | \$ 230,086 | \$ 232,798 | \$ 235,503 | \$ 238,219 | \$ 240,928 |
| Program Cost     | \$ 95,131  | \$ 96,213  | \$ 97,289  | \$ 98,361  | \$ 99,438  | \$ 100,512 |
| Net Benefits     | \$ 132,224 | \$ 133,872 | \$ 135,509 | \$ 137,142 | \$ 138,782 | \$ 140,417 |

|                                       |              |              |              |              |              |              |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Tons avoided through recycling</b> | <b>4,507</b> | <b>4,561</b> | <b>4,614</b> | <b>4,668</b> | <b>4,722</b> | <b>4,776</b> |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|

PV per ton

**35 Foodware Rec/Com**

| Year             | 2021         | 2022         | 2023         | 2024         | 2025         | 2026         |
|------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits | \$ 1,012,267 | \$ 1,017,439 | \$ 1,022,319 | \$ 1,027,274 | \$ 1,032,327 | \$ 1,037,579 |
| Program Cost     | \$ 1,157,932 | \$ 1,163,796 | \$ 1,169,331 | \$ 1,174,950 | \$ 1,180,681 | \$ 1,186,636 |
| Net Benefits     | \$ (145,665) | \$ (146,358) | \$ (147,012) | \$ (147,676) | \$ (148,353) | \$ (149,057) |

|                                       |               |               |               |               |               |               |
|---------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| <b>Tons avoided through recycling</b> | <b>16,055</b> | <b>16,137</b> | <b>16,214</b> | <b>16,293</b> | <b>16,373</b> | <b>16,456</b> |
|---------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|

PV per ton

**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

**All Programs in Scenario**

| Year                                  | 2027          | 2028          | 2029          | 2030          |
|---------------------------------------|---------------|---------------|---------------|---------------|
| Program Benefits                      | \$2,074,575   | \$2,096,221   | \$2,118,328   | \$2,141,066   |
| Program Cost                          | \$1,689,327   | \$1,703,326   | \$1,717,633   | \$1,732,156   |
| Net Benefits                          | \$385,248     | \$392,895     | \$400,694     | \$408,910     |
| <b>Tons avoided through recycling</b> | <b>27,062</b> | <b>27,300</b> | <b>27,541</b> | <b>27,787</b> |

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**13 MF Univer Org Serv**

| Year                                  | 2027         | 2028         | 2029         | 2030         |
|---------------------------------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$ 788,021   | \$ 801,443   | \$ 815,257   | \$ 829,741   |
| Program Cost                          | \$ 395,038   | \$ 401,630   | \$ 408,415   | \$ 415,529   |
| Net Benefits                          | \$ 392,983   | \$ 399,813   | \$ 406,842   | \$ 414,212   |
| <b>Tons avoided through recycling</b> | <b>5,692</b> | <b>5,789</b> | <b>5,888</b> | <b>5,993</b> |

PV per ton

**22 ABC Ban**

| Year                                  | 2027         | 2028         | 2029         | 2030         |
|---------------------------------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$ 243,618   | \$ 246,220   | \$ 248,771   | \$ 251,418   |
| Program Cost                          | \$ 101,578   | \$ 102,610   | \$ 103,621   | \$ 104,670   |
| Net Benefits                          | \$ 142,040   | \$ 143,611   | \$ 145,150   | \$ 146,748   |
| <b>Tons avoided through recycling</b> | <b>4,829</b> | <b>4,880</b> | <b>4,931</b> | <b>4,984</b> |

PV per ton

**35 Foodware Rec/Com**

| Year                                  | 2027          | 2028          | 2029          | 2030          |
|---------------------------------------|---------------|---------------|---------------|---------------|
| Program Benefits                      | \$ 1,042,936  | \$ 1,048,558  | \$ 1,054,300  | \$ 1,059,908  |
| Program Cost                          | \$ 1,192,711  | \$ 1,199,086  | \$ 1,205,597  | \$ 1,211,957  |
| Net Benefits                          | \$ (149,775)  | \$ (150,528)  | \$ (151,298)  | \$ (152,049)  |
| <b>Tons avoided through recycling</b> | <b>16,541</b> | <b>16,631</b> | <b>16,722</b> | <b>16,811</b> |

PV per ton

Summary - Program Tons Per Year Scenario 31, Recommended

|      |              |                |                |                | Order ->      | 15            | 1             | 2           | 3              | 4              | 5 |
|------|--------------|----------------|----------------|----------------|---------------|---------------|---------------|-------------|----------------|----------------|---|
| Year | Recycle Rate | Total Material | Total Disposed | Total Recycled | Curb/ Apt Rec | BY YW In City | BY FW In City | Grass-cycle | BY YW Not City | BY FW Not City |   |
|      |              | -              | -              | -              | 2             | 3             | 4             | 5           | 6              | 7              |   |
| 1997 | 44.4%        | 816,174        | 453,787        | 362,386        | 67,509        | 6,779         | 16,470        | 5,119       | 7,400          | 2,520          |   |
| 1998 | 44.2%        | 820,212        | 457,598        | 362,613        | 70,279        | 6,680         | 15,887        | 6,038       | 7,700          | 2,823          |   |
| 1999 | 44.0%        | 852,299        | 477,433        | 374,866        | 73,478        | 4,002         | 15,590        | 10,660      | 8,000          | 3,127          |   |
| 2000 | 40.0%        | 793,825        | 476,131        | 317,693        | 72,864        | 4,002         | 873           | 10,660      | 8,000          | 3,127          |   |
| 2001 | 39.3%        | 782,894        | 475,270        | 307,623        | 72,382        | 4,002         | 873           | 10,660      | 8,000          | 3,127          |   |
| 2002 | 39.7%        | 768,422        | 462,996        | 305,426        | 72,543        | 4,002         | 873           | 10,660      | 8,000          | 3,127          |   |
| 2003 | 38.2%        | 741,656        | 458,010        | 283,646        | 73,780        | 4,002         | 873           | 10,660      | 8,000          | 3,127          |   |
| 2004 | 41.2%        | 780,061        | 458,405        | 321,656        | 76,860        | 4,800         | 2,400         | 9,900       | 5,000          | 1,800          |   |
| 2005 | 44.2%        | 789,740        | 440,876        | 348,864        | 81,139        | 4,600         | 2,100         | 9,600       | 4,800          | 1,600          |   |
| 2006 | 47.6%        | 836,373        | 438,380        | 397,993        | 84,531        | 4,600         | 2,100         | 9,600       | 4,800          | 1,600          |   |
| 2007 | 48.3%        | 848,125        | 438,845        | 409,280        | 86,621        | 4,600         | 2,100         | 9,600       | 4,800          | 1,600          |   |
| 2008 | 50.0%        | 789,607        | 394,607        | 395,000        | 81,888        | 4,600         | 2,100         | 9,600       | 4,800          | 1,600          |   |
| 2009 | 51.1%        | 719,423        | 351,688        | 367,735        | 76,584        | 2,600         | 1,100         | 7,100       | 3,500          | 1,700          |   |
| 2010 | 50.9%        | 780,664        | 383,438        | 397,226        | 78,554        | 2,655         | 1,123         | 7,251       | 3,575          | 1,736          |   |
| 2011 | 51.2%        | 783,186        | 382,112        | 401,074        | 78,487        | 2,640         | 1,117         | 7,211       | 3,554          | 1,726          |   |
| 2012 | 52.2%        | 789,299        | 377,271        | 412,028        | 78,285        | 2,628         | 1,112         | 7,176       | 3,538          | 1,718          |   |
| 2013 | 54.1%        | 791,832        | 363,453        | 428,379        | 77,923        | 2,612         | 1,105         | 7,134       | 3,517          | 1,708          |   |
| 2014 | 56.9%        | 794,323        | 342,118        | 452,205        | 77,247        | 2,597         | 1,099         | 7,092       | 3,496          | 1,698          |   |
| 2015 | 60.0%        | 795,698        | 318,222        | 477,476        | 76,491        | 2,582         | 1,093         | 7,053       | 3,477          | 1,688          |   |
| 2016 | 62.5%        | 798,068        | 299,551        | 498,517        | 76,135        | 2,575         | 1,090         | 7,034       | 3,468          | 1,684          |   |
| 2017 | 64.7%        | 802,464        | 283,490        | 518,974        | 76,708        | 2,596         | 1,098         | 7,091       | 3,496          | 1,697          |   |
| 2018 | 65.6%        | 804,837        | 277,168        | 527,669        | 76,507        | 2,583         | 1,093         | 7,055       | 3,478          | 1,688          |   |
| 2019 | 67.3%        | 807,071        | 264,284        | 542,787        | 76,266        | 2,568         | 1,087         | 7,015       | 3,459          | 1,679          |   |
| 2020 | 68.7%        | 810,694        | 253,741        | 556,953        | 76,136        | 2,556         | 1,082         | 6,983       | 3,443          | 1,671          |   |
| 2021 | 69.6%        | 816,837        | 248,245        | 568,592        | 76,738        | 2,568         | 1,087         | 7,017       | 3,460          | 1,679          |   |
| 2022 | 70.1%        | 822,953        | 246,242        | 576,711        | 77,347        | 2,581         | 1,092         | 7,051       | 3,476          | 1,687          |   |
| 2023 | 70.4%        | 829,180        | 245,651        | 583,529        | 78,002        | 2,595         | 1,098         | 7,089       | 3,495          | 1,696          |   |
| 2024 | 70.6%        | 835,530        | 245,254        | 590,276        | 78,677        | 2,609         | 1,104         | 7,127       | 3,514          | 1,706          |   |
| 2025 | 70.9%        | 842,027        | 245,233        | 596,795        | 79,372        | 2,624         | 1,110         | 7,168       | 3,534          | 1,715          |   |
| 2026 | 71.0%        | 848,581        | 246,070        | 602,511        | 80,063        | 2,638         | 1,116         | 7,207       | 3,553          | 1,725          |   |
| 2027 | 71.0%        | 855,143        | 247,654        | 607,489        | 80,758        | 2,652         | 1,122         | 7,246       | 3,572          | 1,734          |   |
| 2028 | 71.0%        | 861,830        | 249,647        | 612,183        | 81,483        | 2,667         | 1,129         | 7,287       | 3,593          | 1,744          |   |
| 2029 | 71.0%        | 868,628        | 251,839        | 616,789        | 82,232        | 2,683         | 1,135         | 7,330       | 3,614          | 1,754          |   |
| 2030 | 71.0%        | 875,647        | 254,180        | 621,467        | 83,034        | 2,700         | 1,143         | 7,377       | 3,637          | 1,765          |   |

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Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs

|      | 17               | 22             | 25            | 27              | 28                            | 20                       | 33                         | 42     | 30                                     | 9                          |
|------|------------------|----------------|---------------|-----------------|-------------------------------|--------------------------|----------------------------|--------|----------------------------------------|----------------------------|
| Year | Curb/<br>Apt Org | Clean<br>Green | Drop<br>Sites | Com Priv<br>Rec | Food-<br>ware<br>Rec/<br>Comp | MF<br>Univer<br>Org Serv | Incr Res<br>Ban<br>Enforce | Carpet | Enhance<br>Com<br>Paper Ban<br>Enforce | Phone &<br>Junk Opt<br>Out |
|      | 8                | 21             | 23            | 30              | 35                            | 13                       | 19                         | 36     | 38                                     | 44                         |
| 1997 | 43,130           | 14,137         | 5,000         | 194,323         | -                             | -                        | -                          | -      | -                                      | -                          |
| 1998 | 40,546           | 13,034         | 5,376         | 194,251         | -                             | -                        | -                          | -      | -                                      | -                          |
| 1999 | 39,737           | 13,692         | 6,612         | 199,968         | -                             | -                        | -                          | -      | -                                      | -                          |
| 2000 | 34,037           | 14,032         | 7,109         | 162,989         | -                             | -                        | -                          | -      | -                                      | -                          |
| 2001 | 36,990           | 15,034         | 7,103         | 149,453         | -                             | -                        | -                          | -      | -                                      | -                          |
| 2002 | 34,503           | 14,353         | 8,340         | 149,025         | -                             | -                        | -                          | -      | -                                      | -                          |
| 2003 | 33,923           | 14,156         | 8,170         | 126,956         | -                             | -                        | -                          | -      | -                                      | -                          |
| 2004 | 38,485           | 14,907         | 8,163         | 159,341         | -                             | -                        | -                          | -      | -                                      | -                          |
| 2005 | 42,603           | 13,925         | 9,232         | 179,265         | -                             | -                        | -                          | -      | -                                      | -                          |
| 2006 | 51,482           | 14,277         | 9,745         | 215,258         | -                             | -                        | -                          | -      | -                                      | -                          |
| 2007 | 54,573           | 14,247         | 11,246        | 219,894         | -                             | -                        | -                          | -      | -                                      | -                          |
| 2008 | 56,364           | 11,893         | 8,662         | 213,493         | -                             | -                        | -                          | -      | -                                      | -                          |
| 2009 | 74,230           | 10,149         | 6,179         | 184,593         | -                             | -                        | -                          | -      | -                                      | -                          |
| 2010 | 76,624           | 11,351         | 6,907         | 205,610         | 1,840                         | -                        | -                          | -      | -                                      | -                          |
| 2011 | 77,214           | 11,571         | 7,033         | 206,360         | 4,161                         | -                        | -                          | -      | -                                      | -                          |
| 2012 | 78,462           | 11,925         | 7,229         | 208,209         | 7,793                         | 1,647                    | 1,052                      | 93     | 790                                    | 371                        |
| 2013 | 79,800           | 12,190         | 7,341         | 208,764         | 11,418                        | 3,024                    | 2,325                      | 237    | 1,993                                  | 834                        |
| 2014 | 80,962           | 12,414         | 7,373         | 209,507         | 13,795                        | 4,285                    | 4,235                      | 543    | 4,511                                  | 1,552                      |
| 2015 | 82,021           | 12,583         | 7,309         | 209,800         | 14,941                        | 4,896                    | 6,086                      | 1,021  | 8,403                                  | 2,281                      |
| 2016 | 83,062           | 12,742         | 7,235         | 210,186         | 15,427                        | 5,027                    | 7,272                      | 1,509  | 12,311                                 | 2,770                      |
| 2017 | 84,518           | 12,824         | 7,173         | 210,536         | 15,628                        | 5,051                    | 7,911                      | 1,830  | 14,860                                 | 3,041                      |
| 2018 | 84,526           | 12,992         | 7,213         | 211,185         | 15,737                        | 5,046                    | 8,141                      | 1,356  | 16,121                                 | 3,132                      |
| 2019 | 84,252           | 13,145         | 7,276         | 212,031         | 15,818                        | 5,052                    | 8,219                      | 1,415  | 16,686                                 | 3,157                      |
| 2020 | 83,989           | 13,295         | 7,350         | 213,477         | 15,967                        | 5,077                    | 8,253                      | 1,447  | 16,992                                 | 3,160                      |
| 2021 | 84,488           | 13,443         | 7,429         | 214,826         | 16,055                        | 5,156                    | 8,346                      | 1,470  | 17,157                                 | 3,183                      |
| 2022 | 84,974           | 13,602         | 7,515         | 216,103         | 16,137                        | 5,238                    | 8,432                      | 1,490  | 17,275                                 | 3,203                      |
| 2023 | 85,501           | 13,761         | 7,603         | 217,340         | 16,214                        | 5,324                    | 8,521                      | 1,508  | 17,374                                 | 3,224                      |
| 2024 | 86,043           | 13,921         | 7,691         | 218,598         | 16,293                        | 5,414                    | 8,611                      | 1,526  | 17,467                                 | 3,244                      |
| 2025 | 86,601           | 14,081         | 7,779         | 219,885         | 16,373                        | 5,505                    | 8,703                      | 1,543  | 17,562                                 | 3,266                      |
| 2026 | 87,150           | 14,241         | 7,868         | 221,207         | 16,456                        | 5,598                    | 8,795                      | 1,561  | 17,659                                 | 3,286                      |
| 2027 | 87,699           | 14,400         | 7,955         | 222,528         | 16,541                        | 5,692                    | 8,888                      | 1,578  | 17,756                                 | 3,307                      |
| 2028 | 88,276           | 14,554         | 8,040         | 223,887         | 16,631                        | 5,789                    | 8,984                      | 1,595  | 17,857                                 | 3,329                      |
| 2029 | 88,874           | 14,705         | 8,124         | 225,269         | 16,722                        | 5,888                    | 9,084                      | 1,612  | 17,960                                 | 3,351                      |
| 2030 | 89,524           | 14,861         | 8,210         | 226,630         | 16,811                        | 5,993                    | 9,190                      | 1,629  | 18,060                                 | 3,376                      |

Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs

|      | 23      | 52                   | 44                 | 45             | 38                  | 41                 | 46             | 21         | 6             | 32             |
|------|---------|----------------------|--------------------|----------------|---------------------|--------------------|----------------|------------|---------------|----------------|
| Year | ABC Ban | Ban Asphalt Shingles | Floor Sort 50% C&D | Enhanc Com Org | Restore Educa- tion | Educa- tion Audits | Plast Film Ban | SF Org Ban | Reuse Bag Res | Extend Com Ban |
| 1997 | -       | -                    | -                  | -              | -                   | -                  | -              | -          | -             | -              |
| 1998 | -       | -                    | -                  | -              | -                   | -                  | -              | -          | -             | -              |
| 1999 | -       | -                    | -                  | -              | -                   | -                  | -              | -          | -             | -              |
| 2000 | -       | -                    | -                  | -              | -                   | -                  | -              | -          | -             | -              |
| 2001 | -       | -                    | -                  | -              | -                   | -                  | -              | -          | -             | -              |
| 2002 | -       | -                    | -                  | -              | -                   | -                  | -              | -          | -             | -              |
| 2003 | -       | -                    | -                  | -              | -                   | -                  | -              | -          | -             | -              |
| 2004 | -       | -                    | -                  | -              | -                   | -                  | -              | -          | -             | -              |
| 2005 | -       | -                    | -                  | -              | -                   | -                  | -              | -          | -             | -              |
| 2006 | -       | -                    | -                  | -              | -                   | -                  | -              | -          | -             | -              |
| 2007 | -       | -                    | -                  | -              | -                   | -                  | -              | -          | -             | -              |
| 2008 | -       | -                    | -                  | -              | -                   | -                  | -              | -          | -             | -              |
| 2009 | -       | -                    | -                  | -              | -                   | -                  | -              | -          | -             | -              |
| 2010 | -       | -                    | -                  | -              | -                   | -                  | -              | -          | -             | -              |
| 2011 | -       | -                    | -                  | -              | -                   | -                  | -              | -          | -             | -              |
| 2012 | -       | -                    | -                  | -              | -                   | -                  | -              | -          | -             | -              |
| 2013 | 1,401   | 646                  | 2,216              | 935            | 519                 | 400                | 336            | -          | -             | -              |
| 2014 | 2,642   | 693                  | 4,935              | 2,020          | 1,141               | 907                | 618            | 1,881      | 10            | 733            |
| 2015 | 3,903   | 628                  | 8,961              | 3,670          | 2,044               | 1,682              | 892            | 4,114      | 22            | 1,655          |
| 2016 | 4,748   | 542                  | 12,715             | -              | 2,870               | 2,396              | 1,053          | 7,545      | 43            | 3,084          |
| 2017 | 5,159   | 486                  | 15,069             | -              | 3,371               | 2,852              | 1,115          | 11,073     | 67            | 4,520          |
| 2018 | 4,278   | 463                  | 16,319             | -              | 3,615               | 3,091              | 95             | 13,254     | 85            | 5,466          |
| 2019 | 4,378   | 457                  | 16,937             | -              | 3,729               | 3,209              | 97             | 14,244     | 95            | 5,938          |
| 2020 | 4,447   | 458                  | 17,293             | -              | 3,790               | 3,276              | 98             | 14,614     | 100           | 6,170          |
| 2021 | 4,504   | 461                  | 17,548             | -              | 3,839               | 3,325              | 99             | 14,853     | 102           | 6,284          |
| 2022 | 4,560   | 466                  | 17,778             | -              | 3,882               | 3,368              | 101            | 14,987     | 104           | 6,352          |
| 2023 | 4,614   | 471                  | 17,995             | -              | 3,923               | 3,409              | 102            | 15,091     | 105           | 6,402          |
| 2024 | 4,668   | 476                  | 18,206             | -              | 3,963               | 3,449              | 103            | 15,182     | 106           | 6,448          |
| 2025 | 4,722   | 482                  | 18,417             | -              | 4,003               | 3,489              | 104            | 15,271     | 107           | 6,492          |
| 2026 | 4,776   | 487                  | 18,627             | -              | 4,044               | 3,529              | 105            | 15,356     | 108           | 6,537          |
| 2027 | 4,829   | 493                  | 18,835             | -              | 4,084               | 3,568              | 107            | 15,440     | 109           | 6,582          |
| 2028 | 4,880   | 498                  | 19,036             | -              | 4,124               | 3,606              | 108            | 15,528     | 110           | 6,628          |
| 2029 | 4,931   | 503                  | 19,234             | -              | 4,164               | 3,644              | 109            | 15,619     | 111           | 6,675          |
| 2030 | 4,984   | 508                  | 19,438             | -              | 4,205               | 3,682              | 110            | 15,720     | 113           | 6,723          |

Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs

|      | 53             | 31         | 18                | 13              | 10                 | 49                 | 29          | 26                | 55          | 50                  |
|------|----------------|------------|-------------------|-----------------|--------------------|--------------------|-------------|-------------------|-------------|---------------------|
| Year | Latex          |            |                   |                 |                    |                    |             |                   |             |                     |
|      | Ban Clean Wood | MF Org Ban | Plast Bag Ban Res | Paint Prod Stew | Divert Reuse-ables | Textile Market Dev | Ban Com Org | Pre Scale Recycle | Com C&D Ban | Pet Waste & Diapers |
|      | 45             | 14         | 16                | 42              | 52                 | 12                 | 32          | 51                | 46          | 15                  |
| 1997 | -              | -          | -                 | -               | -                  | -                  | -           | -                 | -           | -                   |
| 1998 | -              | -          | -                 | -               | -                  | -                  | -           | -                 | -           | -                   |
| 1999 | -              | -          | -                 | -               | -                  | -                  | -           | -                 | -           | -                   |
| 2000 | -              | -          | -                 | -               | -                  | -                  | -           | -                 | -           | -                   |
| 2001 | -              | -          | -                 | -               | -                  | -                  | -           | -                 | -           | -                   |
| 2002 | -              | -          | -                 | -               | -                  | -                  | -           | -                 | -           | -                   |
| 2003 | -              | -          | -                 | -               | -                  | -                  | -           | -                 | -           | -                   |
| 2004 | -              | -          | -                 | -               | -                  | -                  | -           | -                 | -           | -                   |
| 2005 | -              | -          | -                 | -               | -                  | -                  | -           | -                 | -           | -                   |
| 2006 | -              | -          | -                 | -               | -                  | -                  | -           | -                 | -           | -                   |
| 2007 | -              | -          | -                 | -               | -                  | -                  | -           | -                 | -           | -                   |
| 2008 | -              | -          | -                 | -               | -                  | -                  | -           | -                 | -           | -                   |
| 2009 | -              | -          | -                 | -               | -                  | -                  | -           | -                 | -           | -                   |
| 2010 | -              | -          | -                 | -               | -                  | -                  | -           | -                 | -           | -                   |
| 2011 | -              | -          | -                 | -               | -                  | -                  | -           | -                 | -           | -                   |
| 2012 | -              | -          | -                 | -               | -                  | -                  | -           | -                 | -           | -                   |
| 2013 | -              | -          | -                 | -               | -                  | -                  | -           | -                 | -           | -                   |
| 2014 | 4,219          | -          | -                 | -               | -                  | -                  | -           | -                 | -           | -                   |
| 2015 | 7,536          | 255        | 155               | 209             | 26                 | -                  | -           | -                 | -           | -                   |
| 2016 | 10,570         | 589        | 288               | 390             | 48                 | 87                 | 1,234       | 786               | -           | -                   |
| 2017 | 12,377         | 1,277      | 425               | 575             | 71                 | 222                | 3,093       | 1,164             | -           | -                   |
| 2018 | 6,666          | 2,333      | 512               | 696             | 87                 | 512                | 6,984       | 1,424             | 3,935       | -                   |
| 2019 | 6,870          | 3,395      | 552               | 756             | 95                 | 997                | 13,017      | 1,560             | 7,339       | -                   |
| 2020 | 6,996          | 4,101      | 569               | 784             | 99                 | 1,563              | 19,180      | 1,627             | 10,752      | 159                 |
| 2021 | 7,092          | 4,500      | 581               | 801             | 102                | 2,032              | 23,244      | 1,665             | 13,041      | 418                 |
| 2022 | 7,183          | 4,712      | 589               | 812             | 103                | 2,311              | 25,266      | 1,692             | 14,193      | 1,049               |
| 2023 | 7,269          | 4,844      | 595               | 822             | 105                | 2,454              | 26,168      | 1,714             | 14,727      | 2,376               |
| 2024 | 7,354          | 4,946      | 602               | 831             | 106                | 2,527              | 26,587      | 1,735             | 15,000      | 4,442               |
| 2025 | 7,439          | 5,038      | 608               | 841             | 107                | 2,572              | 26,812      | 1,755             | 15,177      | 6,537               |
| 2026 | 7,524          | 5,125      | 614               | 851             | 108                | 2,605              | 26,967      | 1,775             | 15,319      | 7,929               |
| 2027 | 7,608          | 5,212      | 620               | 860             | 110                | 2,635              | 27,089      | 1,795             | 15,448      | 8,633               |
| 2028 | 7,689          | 5,302      | 626               | 870             | 111                | 2,664              | 27,212      | 1,815             | 15,568      | 8,963               |
| 2029 | 7,769          | 5,393      | 633               | 881             | 112                | 2,693              | 27,323      | 1,833             | 15,691      | 9,132               |
| 2030 | 7,852          | 5,489      | 640               | 892             | 113                | 2,724              | 27,421      | 1,853             | 15,819      | 9,243               |

Summary - Program Sector Materials Diversion by Program  
Recommended Year 2025 All MSW Sectors

| Material MSW          |                | Total Disposed<br>1 | Total Recycled<br>2 | Total Generated<br>3 | Percent Recycled<br>(2/3) | Curb/Apt Rec<br>2 | BY YW In City<br>3 | BY FW In City<br>4 | Grasscycle<br>5 | BY YW Not City<br>6 | BY FW Not City<br>7 | Curb/Apt Org<br>8 |
|-----------------------|----------------|---------------------|---------------------|----------------------|---------------------------|-------------------|--------------------|--------------------|-----------------|---------------------|---------------------|-------------------|
| Aluminum Beverage     | BALU           | 405                 | 2,628               | 3,033                | 86.6%                     | 965               | -                  | -                  | -               | -                   | -                   | -                 |
| Beverage Glass        | BGLS           | 1,703               | 21,354              | 23,056               | 92.6%                     | 15,229            | -                  | -                  | -               | -                   | -                   | -                 |
| Construction Debris   | CDEB           | 16,407              | 14,308              | 30,715               | 46.6%                     | -                 | -                  | -                  | -               | -                   | -                   | -                 |
| Container Glass       | CGLS           | 257                 | 3,356               | 3,613                | 92.9%                     | 2,981             | -                  | -                  | -               | -                   | -                   | -                 |
| Computer Office Paper | CPO            | 6,533               | 21,301              | 27,834               | 76.5%                     | -                 | -                  | -                  | -               | -                   | -                   | -                 |
| Food Cans             | FFER           | 616                 | 2,936               | 3,552                | 82.7%                     | 1,082             | -                  | -                  | -               | -                   | -                   | -                 |
| Food                  | FOOD           | 16,591              | 119,243             | 135,834              | 87.8%                     | -                 | -                  | 1,110              | -               | -                   | 1,715               | 31,632            |
| Miscellaneous         | MISC           | 45,917              | 32,872              | 78,789               | 41.7%                     | -                 | -                  | -                  | -               | -                   | -                   | -                 |
| Mixed Scrap Paper     | MWP            | 8,343               | 61,803              | 70,147               | 88.1%                     | 25,367            | -                  | -                  | -               | -                   | -                   | -                 |
| Newspaper             | NP             | 4,665               | 44,393              | 49,058               | 90.5%                     | 15,792            | -                  | -                  | -               | -                   | -                   | -                 |
| Other Paper           | NRP            | 13,182              | 22,608              | 35,790               | 63.2%                     | -                 | -                  | -                  | -               | -                   | -                   | 3,735             |
| Other Aluminum        | OALU           | 763                 | 401                 | 1,164                | 34.5%                     | -                 | -                  | -                  | -               | -                   | -                   | -                 |
| Corrugated Kraft      | OCC            | 9,386               | 75,833              | 85,219               | 89.0%                     | 13,453            | -                  | -                  | -               | -                   | -                   | -                 |
| Other Ferrous         | OFER           | 5,162               | 19,985              | 25,147               | 79.5%                     | 630               | -                  | -                  | -               | -                   | -                   | -                 |
| Other Glass           | OGLS           | 5,140               | 971                 | 6,110                | 15.9%                     | -                 | -                  | -                  | -               | -                   | -                   | -                 |
| Other NonFerrous      | ONFR           | 145                 | 71                  | 216                  | 33.0%                     | -                 | -                  | -                  | -               | -                   | -                   | -                 |
| Other Organics        | OORG           | 30,657              | 9,109               | 39,766               | 22.9%                     | -                 | -                  | -                  | -               | -                   | -                   | -                 |
| Plastics              | PLST           | 44,588              | 13,831              | 58,419               | 23.7%                     | 3,874             | -                  | -                  | -               | -                   | -                   | -                 |
| Wood                  | WOOD           | 26,177              | 28,112              | 54,289               | 51.8%                     | -                 | -                  | -                  | -               | -                   | -                   | -                 |
| Yard                  | YARD           | 8,596               | 101,680             | 110,276              | 92.2%                     | -                 | 2,624              | -                  | 7,168           | 3,534               | -                   | 51,235            |
| <b>Total</b>          | <b>Grand 1</b> | <b>245,233</b>      | <b>596,795</b>      | <b>842,027</b>       | <b>70.9%</b>              | <b>79,372</b>     | <b>2,624</b>       | <b>1,110</b>       | <b>7,168</b>    | <b>3,534</b>        | <b>1,715</b>        | <b>86,601</b>     |

(in tons per year)

| Year | Total Disposed<br>1 | Total Recycled<br>2 | Total Generated<br>3 | Percent Recycled<br>(2/3) |
|------|---------------------|---------------------|----------------------|---------------------------|
| 1997 | 453,787             | 362,386             | 816,174              | 44.4%                     |
| 1998 | 457,598             | 362,613             | 820,212              | 44.2%                     |
| 1999 | 477,433             | 374,866             | 852,299              | 44.0%                     |
| 2000 | 476,131             | 317,693             | 793,825              | 40.0%                     |
| 2001 | 475,270             | 307,623             | 782,894              | 39.3%                     |
| 2002 | 462,996             | 305,426             | 768,422              | 39.7%                     |
| 2003 | 458,010             | 283,646             | 741,656              | 38.2%                     |
| 2004 | 458,405             | 321,656             | 780,061              | 41.2%                     |
| 2005 | 440,876             | 348,864             | 789,740              | 44.2%                     |
| 2006 | 438,380             | 397,993             | 836,373              | 47.6%                     |
| 2007 | 438,845             | 409,280             | 848,125              | 48.3%                     |
| 2008 | 394,607             | 395,000             | 789,607              | 50.0%                     |
| 2009 | 351,688             | 367,735             | 719,423              | 51.1%                     |
| 2010 | 383,438             | 397,226             | 780,664              | 50.9%                     |
| 2011 | 382,112             | 401,074             | 783,186              | 51.2%                     |
| 2012 | 377,271             | 412,028             | 789,299              | 52.2%                     |
| 2013 | 363,453             | 428,379             | 791,832              | 54.1%                     |
| 2014 | 342,118             | 452,205             | 794,323              | 56.9%                     |
| 2015 | 318,222             | 477,476             | 795,698              | 60.0%                     |
| 2016 | 299,551             | 498,517             | 798,068              | 62.5%                     |
| 2017 | 283,490             | 518,974             | 802,464              | 64.7%                     |
| 2018 | 277,168             | 527,669             | 804,837              | 65.6%                     |
| 2019 | 264,284             | 542,787             | 807,071              | 67.3%                     |
| 2020 | 253,741             | 556,953             | 810,694              | 68.7%                     |
| 2021 | 248,245             | 568,592             | 816,837              | 69.6%                     |
| 2022 | 246,242             | 576,711             | 822,953              | 70.1%                     |
| 2023 | 245,651             | 583,529             | 829,180              | 70.4%                     |
| 2024 | 245,254             | 590,276             | 835,530              | 70.6%                     |
| 2025 | 245,233             | 596,795             | 842,027              | 70.9%                     |
| 2026 | 246,070             | 602,511             | 848,581              | 71.0%                     |
| 2027 | 247,654             | 607,489             | 855,143              | 71.0%                     |
| 2028 | 249,647             | 612,183             | 861,830              | 71.0%                     |
| 2029 | 251,839             | 616,789             | 868,628              | 71.0%                     |
| 2030 | 254,180             | 621,467             | 875,647              | 71.0%                     |

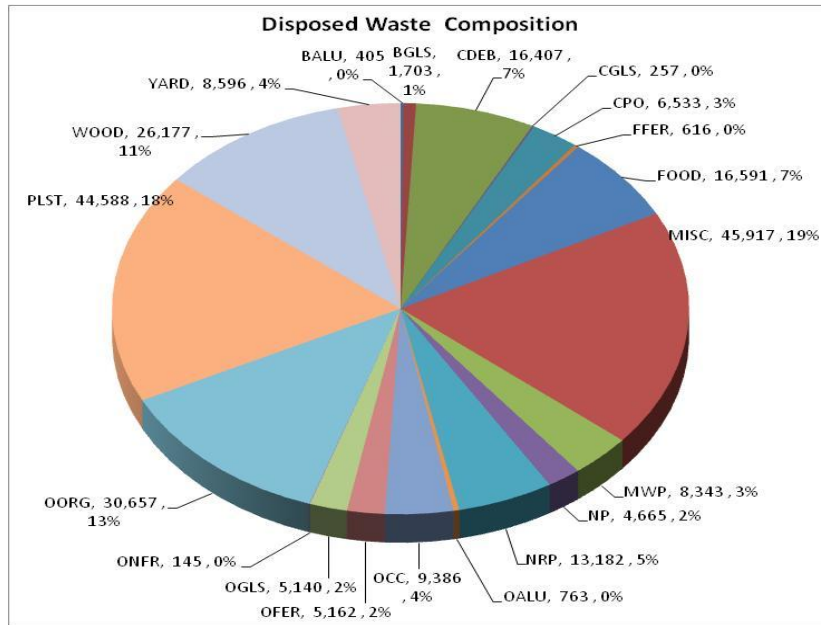


Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs

| Material MSW          |                    | MF                 |                 |              |                     |                   |               |                      |               |               |              |              |
|-----------------------|--------------------|--------------------|-----------------|--------------|---------------------|-------------------|---------------|----------------------|---------------|---------------|--------------|--------------|
|                       |                    | Textile Market Dev | Univer Org Serv | MF Org Ban   | Pet Waste & Diapers | Plast Bag Ban Res | SF Org Ban    | Incr Res Ban Enforce | Reuse Bag Res | Clean Green   | ABC Ban      | Drop Sites   |
|                       |                    | 12                 | 13              | 14           | 15                  | 16                | 18            | 19                   | 20            | 21            | 22           | 23           |
| Aluminum Beverage     | BALU               | -                  | -               | -            | -                   | -                 | -             | 202                  | -             | -             | -            | 4            |
| Beverage Glass        | BGLS               | -                  | -               | -            | -                   | -                 | -             | 925                  | -             | -             | -            | 537          |
| Construction Debris   | CDEB               | -                  | -               | -            | -                   | -                 | -             | -                    | -             | -             | 4,722        | -            |
| Container Glass       | CGLS               | -                  | -               | -            | -                   | -                 | -             | 223                  | -             | -             | -            | -            |
| Computer Office Paper | CPO                | -                  | -               | -            | -                   | -                 | -             | 558                  | -             | -             | -            | -            |
| Food Cans             | FFER               | -                  | -               | -            | -                   | -                 | -             | 434                  | -             | -             | -            | -            |
| Food                  | FOOD               | -                  | 4,499           | 3,916        | -                   | -                 | 11,053        | -                    | -             | -             | -            | -            |
| Miscellaneous         | MISC               | -                  | -               | -            | -                   | -                 | -             | -                    | -             | -             | -            | 63           |
| Mixed Scrap Paper     | MWP                | -                  | -               | -            | -                   | -                 | -             | 3,452                | -             | -             | -            | 477          |
| Newspaper             | NP                 | -                  | -               | -            | -                   | -                 | -             | 545                  | -             | -             | -            | 385          |
| Other Paper           | NRP                | -                  | 1,006           | 1,122        | -                   | -                 | 4,218         | -                    | -             | -             | -            | -            |
| Other Aluminum        | OALU               | -                  | -               | -            | -                   | -                 | -             | -                    | -             | -             | -            | -            |
| Corrugated Kraft      | OCC                | -                  | -               | -            | -                   | -                 | -             | 1,147                | -             | -             | -            | 1,006        |
| Other Ferrous         | OFER               | -                  | -               | -            | -                   | -                 | -             | -                    | -             | -             | -            | 5,036        |
| Other Glass           | OGLS               | -                  | -               | -            | -                   | -                 | -             | -                    | -             | -             | -            | -            |
| Other NonFerrous      | ONFR               | -                  | -               | -            | -                   | -                 | -             | -                    | -             | -             | -            | -            |
| Other Organics        | OORG               | 2,572              | -               | -            | 6,537               | -                 | -             | -                    | -             | -             | -            | -            |
| Plastics              | PLST               | -                  | -               | -            | -                   | 608               | -             | -                    | 107           | -             | -            | 27           |
| Wood                  | WOOD               | -                  | -               | -            | -                   | -                 | -             | -                    | -             | -             | -            | 244          |
| Yard                  | YARD               | -                  | -               | -            | -                   | -                 | -             | 1,217                | -             | 14,081        | -            | -            |
| <b>Total</b>          | <b>Grand Total</b> | <b>2,572</b>       | <b>5,505</b>    | <b>5,038</b> | <b>6,537</b>        | <b>608</b>        | <b>15,271</b> | <b>8,703</b>         | <b>107</b>    | <b>14,081</b> | <b>4,722</b> | <b>7,779</b> |

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**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

| Material MSW          |                | Ban        | Floor         | Com Priv       | Ban Com       | Foodware      | Enhanc       | Enhance  | Extend        | Restore      |              |
|-----------------------|----------------|------------|---------------|----------------|---------------|---------------|--------------|----------|---------------|--------------|--------------|
|                       |                | Asphalt    | Sort 50%      |                |               |               |              |          |               |              | Com Priv     |
|                       |                | Shingles   | C&D           | Rec            | Org           | Rec/Comp      | Carpet       | Org      | Ban Enforce   | Com Ban      | Education    |
|                       |                | 26         | 29            | 30             | 32            | 35            | 36           | 37       | 38            | 39           | 41           |
| Aluminum Beverage     | BALU           | -          | -             | 885            | -             | -             | -            | -        | -             | 539          | 17           |
| Beverage Glass        | BGLS           | -          | -             | 2,771          | -             | -             | -            | -        | -             | 1,781        | 46           |
| Construction Debris   | CDEB           | 482        | 7,167         | -              | -             | -             | -            | -        | -             | -            | -            |
| Container Glass       | CGLS           | -          | -             | -              | -             | -             | -            | -        | -             | 128          | 11           |
| Computer Office Paper | CPO            | -          | -             | 16,023         | -             | -             | -            | -        | 4,438         | -            | 52           |
| Food Cans             | FFER           | -          | -             | 775            | -             | -             | -            | -        | -             | 604          | 26           |
| Food                  | FOOD           | -          | -             | 35,055         | 22,404        | 7,498         | -            | -        | -             | -            | -            |
| Miscellaneous         | MISC           | -          | -             | 30,038         | -             | -             | 1,543        | -        | -             | -            | -            |
| Mixed Scrap Paper     | MWPP           | -          | -             | 25,197         | -             | -             | -            | -        | 3,391         | -            | 185          |
| Newspaper             | NP             | -          | -             | 23,919         | -             | -             | -            | -        | 3,558         | -            | 194          |
| Other Paper           | NRP            | -          | -             | -              | 4,408         | 8,119         | -            | -        | -             | -            | -            |
| Other Aluminum        | OALU           | -          | -             | -              | -             | -             | -            | -        | -             | 365          | 27           |
| Corrugated Kraft      | OCC            | -          | 750           | 52,004         | -             | -             | -            | -        | 6,175         | -            | 438          |
| Other Ferrous         | OFER           | -          | 1,533         | 6,942          | -             | -             | -            | -        | -             | -            | 466          |
| Other Glass           | OGLS           | -          | -             | 971            | -             | -             | -            | -        | -             | -            | -            |
| Other NonFerrous      | ONFR           | -          | 42            | -              | -             | -             | -            | -        | -             | -            | -            |
| Other Organics        | OORG           | -          | -             | -              | -             | -             | -            | -        | -             | -            | -            |
| Plastics              | PLST           | -          | -             | 4,407          | -             | 755           | -            | -        | -             | 3,075        | -            |
| Wood                  | WOOD           | -          | 8,925         | -              | -             | -             | -            | -        | -             | -            | 2,160        |
| Yard                  | YARD           | -          | -             | 20,899         | -             | -             | -            | -        | -             | -            | 381          |
| <b>Total</b>          | <b>Grand 1</b> | <b>482</b> | <b>18,417</b> | <b>219,885</b> | <b>26,812</b> | <b>16,373</b> | <b>1,543</b> | <b>-</b> | <b>17,562</b> | <b>6,492</b> | <b>4,003</b> |

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**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

| Material MSW          |                | Latex      | Educatio     | Phone &      | Ban          | Com C&D       | Plast      | Divert       |            |
|-----------------------|----------------|------------|--------------|--------------|--------------|---------------|------------|--------------|------------|
|                       |                | Paint      | n Audits     | Junk Opt     | Clean        | Ban           | Film       | Pre Scale    | Reuseab    |
|                       |                | Prod Stew  | 43           | Out          | Wood         | Ban           | Ban        | Recycle      | les        |
|                       |                | 42         | 43           | 44           | 45           | 46            | 50         | 51           | 52         |
| Aluminum Beverage     | BALU           | -          | 4            | -            | -            | -             | -          | 12           | -          |
| Beverage Glass        | BGLS           | -          | 14           | -            | -            | -             | -          | 50           | -          |
| Construction Debris   | CDEB           | -          | 665          | -            | -            | 1,272         | -          | -            | -          |
| Container Glass       | CGLS           | -          | 3            | -            | -            | -             | -          | 10           | -          |
| Computer Office Paper | CPO            | -          | 139          | 91           | -            | -             | -          | -            | -          |
| Food Cans             | FFER           | -          | 3            | -            | -            | -             | -          | 11           | -          |
| Food                  | FOOD           | -          | 360          | -            | -            | -             | -          | -            | -          |
| Miscellaneous         | MISC           | 841        | -            | -            | -            | 351           | -          | -            | 35         |
| Mixed Scrap Paper     | MWP            | -          | 248          | 3,175        | -            | -             | -          | 311          | -          |
| Newspaper             | NP             | -          | -            | -            | -            | -             | -          | 0            | -          |
| Other Paper           | NRP            | -          | -            | -            | -            | -             | -          | -            | -          |
| Other Aluminum        | OALU           | -          | 10           | -            | -            | -             | -          | -            | -          |
| Corrugated Kraft      | OCC            | -          | 382          | -            | -            | -             | -          | 478          | -          |
| Other Ferrous         | OFER           | -          | 246          | -            | -            | 4,248         | -          | 860          | 25         |
| Other Glass           | OGLS           | -          | -            | -            | -            | -             | -          | -            | -          |
| Other NonFerrous      | ONFR           | -          | 7            | -            | -            | -             | -          | 23           | -          |
| Other Organics        | OORG           | -          | -            | -            | -            | -             | -          | -            | -          |
| Plastics              | PLST           | -          | 36           | -            | -            | 839           | 104        | -            | -          |
| Wood                  | WOOD           | -          | 829          | -            | 7,439        | 8,467         | -          | -            | 47         |
| Yard                  | YARD           | -          | 542          | -            | -            | -             | -          | -            | -          |
| <b>Total</b>          | <b>Grand 1</b> | <b>841</b> | <b>3,489</b> | <b>3,266</b> | <b>7,439</b> | <b>15,177</b> | <b>104</b> | <b>1,755</b> | <b>107</b> |

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Summary - Program Sector Materials Diversion by Program  
Recommended Year 2025 Single Family Sector

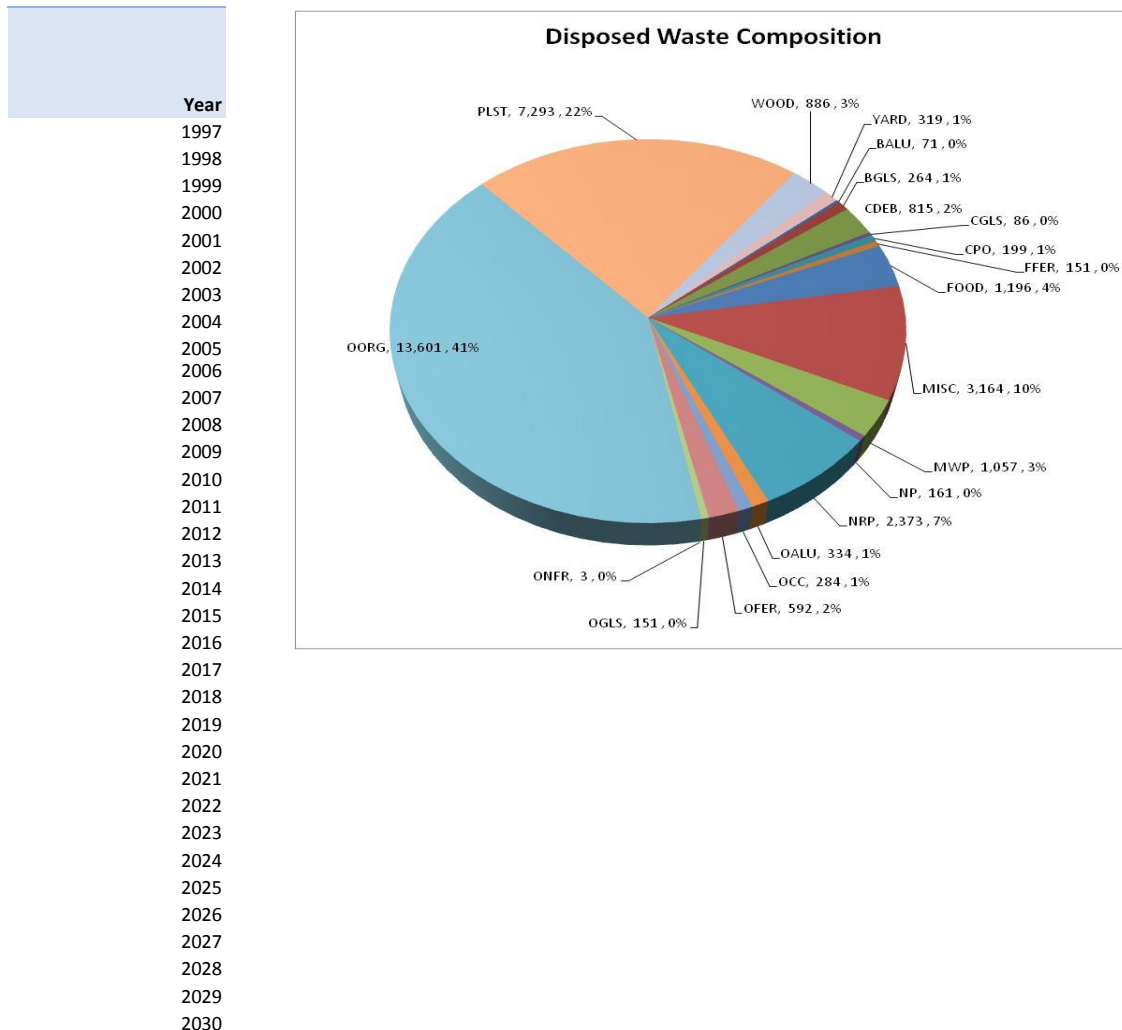
| Material MSW          |              | Total         | Total          | Total          | Percent           | Curb/Apt<br>Rec | BY YW In<br>City | BY FW In<br>City | Grasscycl<br>e | BY YW<br>Not City | BY FW<br>Not City |
|-----------------------|--------------|---------------|----------------|----------------|-------------------|-----------------|------------------|------------------|----------------|-------------------|-------------------|
|                       |              | Disposed<br>1 | Recycled<br>2  | Generated<br>3 | Recycled<br>(2/3) |                 |                  |                  |                |                   |                   |
| Aluminum Beverage     | BALU         | 71            | 877            | 948            | 92.5%             | 742             | -                | -                | -              | -                 | -                 |
| Beverage Glass        | BGLS         | 264           | 11,075         | 11,339         | 97.7%             | 10,575          | -                | -                | -              | -                 | -                 |
| Construction Debris   | CDEB         | 815           | -              | 815            | 0.0%              | -               | -                | -                | -              | -                 | -                 |
| Container Glass       | CGLS         | 86            | 2,233          | 2,319          | 96.3%             | 2,070           | -                | -                | -              | -                 | -                 |
| Computer Office Paper | CPO          | 199           | 455            | 653            | 69.6%             | -               | -                | -                | -              | -                 | -                 |
| Food Cans             | FFER         | 151           | 1,121          | 1,272          | 88.1%             | 835             | -                | -                | -              | -                 | -                 |
| Food                  | FOOD         | 1,196         | 41,345         | 42,540         | 97.2%             | -               | -                | 1,110            | -              | -                 | 1,715             |
| Miscellaneous         | MISC         | 3,164         | 88             | 3,252          | 2.7%              | -               | -                | -                | -              | -                 | -                 |
| Mixed Scrap Paper     | MWP          | 1,057         | 23,448         | 24,505         | 95.7%             | 18,507          | -                | -                | -              | -                 | -                 |
| Newspaper             | NP           | 161           | 12,227         | 12,388         | 98.7%             | 11,923          | -                | -                | -              | -                 | -                 |
| Other Paper           | NRP          | 2,373         | 7,042          | 9,416          | 74.8%             | -               | -                | -                | -              | -                 | -                 |
| Other Aluminum        | OALU         | 334           | 14             | 348            | 4.0%              | -               | -                | -                | -              | -                 | -                 |
| Corrugated Kraft      | OCC          | 284           | 9,328          | 9,611          | 97.0%             | 8,790           | -                | -                | -              | -                 | -                 |
| Other Ferrous         | OFER         | 592           | 414            | 1,006          | 41.2%             | 390             | -                | -                | -              | -                 | -                 |
| Other Glass           | OGLS         | 151           | -              | 151            | 0.0%              | -               | -                | -                | -              | -                 | -                 |
| Other NonFerrous      | ONFR         | 3             | -              | 3              | 0.0%              | -               | -                | -                | -              | -                 | -                 |
| Other Organics        | OORG         | 13,601        | 7,221          | 20,822         | 34.7%             | -               | -                | -                | -              | -                 | -                 |
| Plastics              | PLST         | 7,293         | 3,388          | 10,681         | 31.7%             | 2,951           | -                | -                | -              | -                 | -                 |
| Wood                  | WOOD         | 886           | 37             | 923            | 4.0%              | -               | -                | -                | -              | -                 | -                 |
| Yard                  | YARD         | 319           | 63,671         | 63,989         | 99.5%             | -               | 2,624            | -                | 7,168          | 3,534             | -                 |
| <b>Total</b>          | <b>Grand</b> | <b>32,999</b> | <b>183,983</b> | <b>216,982</b> | <b>84.8%</b>      | <b>56,782</b>   | <b>2,624</b>     | <b>1,110</b>     | <b>7,168</b>   | <b>3,534</b>      | <b>1,715</b>      |

(in tons per year)

| Year | Total         | Total         | Total          | Percent           |
|------|---------------|---------------|----------------|-------------------|
|      | Disposed<br>1 | Recycled<br>2 | Generated<br>3 | Recycled<br>(2/3) |
| 1997 | 88,783        | 137,555       | 226,337        | 60.8%             |
| 1998 | 87,560        | 137,686       | 225,247        | 61.1%             |
| 1999 | 88,631        | 141,956       | 230,586        | 61.6%             |
| 2000 | 87,499        | 120,969       | 208,468        | 58.0%             |
| 2001 | 91,072        | 120,910       | 211,982        | 57.0%             |
| 2002 | 87,834        | 118,640       | 206,474        | 57.5%             |
| 2003 | 87,426        | 118,322       | 205,748        | 57.5%             |
| 2004 | 86,029        | 123,103       | 209,132        | 58.9%             |
| 2005 | 80,479        | 128,197       | 208,676        | 61.4%             |
| 2006 | 78,078        | 138,810       | 216,889        | 64.0%             |
| 2007 | 77,494        | 142,634       | 220,127        | 64.8%             |
| 2008 | 73,961        | 139,928       | 213,889        | 65.4%             |
| 2009 | 67,229        | 147,786       | 215,015        | 68.7%             |
| 2010 | 67,893        | 151,706       | 219,599        | 69.1%             |
| 2011 | 66,550        | 151,809       | 218,360        | 69.5%             |
| 2012 | 64,092        | 153,222       | 217,314        | 70.5%             |
| 2013 | 61,391        | 154,644       | 216,035        | 71.6%             |
| 2014 | 56,935        | 157,829       | 214,764        | 73.5%             |
| 2015 | 52,567        | 160,998       | 213,565        | 75.4%             |
| 2016 | 47,829        | 165,141       | 212,970        | 77.5%             |
| 2017 | 44,073        | 170,588       | 214,661        | 79.5%             |
| 2018 | 41,145        | 172,447       | 213,592        | 80.7%             |
| 2019 | 39,404        | 172,962       | 212,366        | 81.4%             |
| 2020 | 38,275        | 173,119       | 211,394        | 81.9%             |
| 2021 | 37,834        | 174,590       | 212,424        | 82.2%             |
| 2022 | 37,290        | 176,161       | 213,451        | 82.5%             |
| 2023 | 36,258        | 178,332       | 214,590        | 83.1%             |
| 2024 | 34,627        | 181,139       | 215,766        | 84.0%             |
| 2025 | 32,999        | 183,983       | 216,982        | 84.8%             |
| 2026 | 31,995        | 186,176       | 218,171        | 85.3%             |
| 2027 | 31,598        | 187,758       | 219,357        | 85.6%             |
| 2028 | 31,543        | 189,063       | 220,606        | 85.7%             |
| 2029 | 31,638        | 190,268       | 221,906        | 85.7%             |
| 2030 | 31,806        | 191,521       | 223,328        | 85.8%             |

Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs

| Material MSW          |              | Textile       | Pet          | Plast        | SF Org     | Incr Res      | Restore      | Phone &   | Latex      |              |           |
|-----------------------|--------------|---------------|--------------|--------------|------------|---------------|--------------|-----------|------------|--------------|-----------|
|                       |              | Curb/Apt      | Market       | Waste &      |            | Bag Ban       | Ban          | Reuse     | Junk Opt   | Paint        |           |
|                       | .            | Org           | Dev          | Diapers      | Res        | Enforce       | Educatio     | Out       | Prod       |              |           |
|                       | .            | 8             | 12           | 15           | 16         | 18            | 19           | 20        | 41         | 44           | 42        |
| Aluminum Beverage     | BALU         | -             | -            | -            | -          | 132           | -            | 3         | -          | -            |           |
| Beverage Glass        | BGLS         | -             | -            | -            | -          | 489           | -            | 11        | -          | -            |           |
| Construction Debris   | CDEB         | -             | -            | -            | -          | -             | -            | -         | -          | -            |           |
| Container Glass       | CGLS         | -             | -            | -            | -          | 160           | -            | 4         | -          | -            |           |
| Computer Office Paper | CPO          | -             | -            | -            | -          | 368           | -            | 8         | 78         | -            |           |
| Food Cans             | FFER         | -             | -            | -            | -          | 279           | -            | 6         | -          | -            |           |
| Food                  | FOOD         | 27,466        | -            | -            | 11,053     | -             | -            | -         | -          | -            |           |
| Miscellaneous         | MISC         | -             | -            | -            | -          | -             | -            | -         | -          | 88           |           |
| Mixed Scrap Paper     | MWP          | -             | -            | -            | -          | 1,957         | -            | 44        | 2,941      | -            |           |
| Newspaper             | NP           | -             | -            | -            | -          | 298           | -            | 7         | -          | -            |           |
| Other Paper           | NRP          | 2,825         | -            | -            | 4,218      | -             | -            | -         | -          | -            |           |
| Other Aluminum        | OALU         | -             | -            | -            | -          | -             | -            | 14        | -          | -            |           |
| Corrugated Kraft      | OCC          | -             | -            | -            | -          | 525           | -            | 12        | -          | -            |           |
| Other Ferrous         | OFER         | -             | -            | -            | -          | -             | -            | 25        | -          | -            |           |
| Other Glass           | OGLS         | -             | -            | -            | -          | -             | -            | -         | -          | -            |           |
| Other NonFerrous      | ONFR         | -             | -            | -            | -          | -             | -            | -         | -          | -            |           |
| Other Organics        | OORG         | -             | 1,480        | 5,741        | -          | -             | -            | -         | -          | -            |           |
| Plastics              | PLST         | -             | -            | -            | 368        | -             | 69           | -         | -          | -            |           |
| Wood                  | WOOD         | -             | -            | -            | -          | -             | -            | 37        | -          | -            |           |
| Yard                  | YARD         | 49,743        | -            | -            | -          | 590           | -            | 13        | -          | -            |           |
| <b>Total</b>          | <b>Grand</b> | <b>80,033</b> | <b>1,480</b> | <b>5,741</b> | <b>368</b> | <b>15,271</b> | <b>4,799</b> | <b>69</b> | <b>183</b> | <b>3,019</b> | <b>88</b> |



**Summary - Program Sector Materials Diversion by Program  
Recommended Year 2025 Multi Family Sector**

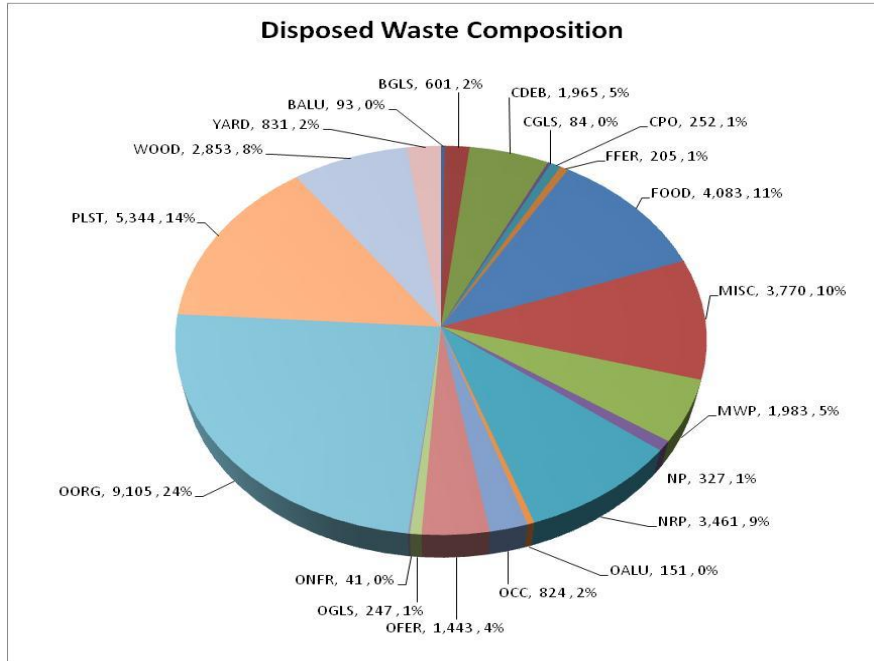
| Material MSW          | Row Lal        | Total         | Total         | Total         | Percent      | Curb/Apt<br>Rec | Curb/Apt<br>Org | Market<br>Dev | Waste &<br>Diapers | Bag Ban<br>Res |
|-----------------------|----------------|---------------|---------------|---------------|--------------|-----------------|-----------------|---------------|--------------------|----------------|
|                       |                | Disposed      | Recycled      | Generated     | Recycled     |                 |                 |               |                    |                |
|                       |                | 1             | 2             | 3             | (2/3)        | 2               | 8               | 12            | 15                 | 16             |
| Aluminum Beverage     | BALU           | 93            | 298           | 391           | 76.2%        | 224             | -               | -             | -                  | -              |
| Beverage Glass        | BGLS           | 601           | 5,090         | 5,692         | 89.4%        | 4,655           | -               | -             | -                  | -              |
| Construction Debris   | CDEB           | 1,965         | -             | 1,965         | 0.0%         | -               | -               | -             | -                  | -              |
| Container Glass       | CGLS           | 84            | 978           | 1,061         | 92.1%        | 911             | -               | -             | -                  | -              |
| Computer Office Paper | CPO            | 252           | 213           | 465           | 45.8%        | -               | -               | -             | -                  | -              |
| Food Cans             | FFER           | 205           | 409           | 615           | 66.6%        | 246             | -               | -             | -                  | -              |
| Food                  | FOOD           | 4,083         | 12,581        | 16,664        | 75.5%        | -               | 4,166           | -             | -                  | -              |
| Miscellaneous         | MISC           | 3,770         | 292           | 4,062         | 7.2%         | -               | -               | -             | -                  | -              |
| Mixed Scrap Paper     | MWP            | 1,983         | 8,672         | 10,655        | 81.4%        | 6,860           | -               | -             | -                  | -              |
| Newspaper             | NP             | 327           | 4,129         | 4,456         | 92.7%        | 3,869           | -               | -             | -                  | -              |
| Other Paper           | NRP            | 3,461         | 3,038         | 6,499         | 46.7%        | -               | 910             | -             | -                  | -              |
| Other Aluminum        | OALU           | 151           | 6             | 158           | 4.0%         | -               | -               | -             | -                  | -              |
| Corrugated Kraft      | OCC            | 824           | 5,318         | 6,143         | 86.6%        | 4,662           | -               | -             | -                  | -              |
| Other Ferrous         | OFER           | 1,443         | 300           | 1,744         | 17.2%        | 240             | -               | -             | -                  | -              |
| Other Glass           | OGLS           | 247           | -             | 247           | 0.0%         | -               | -               | -             | -                  | -              |
| Other NonFerrous      | ONFR           | 41            | -             | 41            | 0.0%         | -               | -               | -             | -                  | -              |
| Other Organics        | OORG           | 9,105         | 1,888         | 10,994        | 17.2%        | -               | -               | 1,092         | 796                | -              |
| Plastics              | PLST           | 5,344         | 1,201         | 6,545         | 18.4%        | 923             | -               | -             | -                  | 240            |
| Wood                  | WOOD           | 2,853         | 119           | 2,972         | 4.0%         | -               | -               | -             | -                  | -              |
| Yard                  | YARD           | 831           | 2,154         | 2,985         | 72.2%        | -               | 1,492           | -             | -                  | -              |
| <b>Total</b>          | <b>Grand T</b> | <b>37,665</b> | <b>46,688</b> | <b>84,353</b> | <b>55.3%</b> | <b>22,590</b>   | <b>6,568</b>    | <b>1,092</b>  | <b>796</b>         | <b>240</b>     |

| Year | Total    | Total    | Total     | Percent  |
|------|----------|----------|-----------|----------|
|      | Disposed | Recycled | Generated | Recycled |
|      | 1        | 2        | 3         | (2/3)    |
| 1997 | 59,189   | 11,371   | 70,560    | 16.1%    |
| 1998 | 58,374   | 12,266   | 70,640    | 17.4%    |
| 1999 | 59,087   | 12,639   | 71,726    | 17.6%    |
| 2000 | 58,333   | 12,595   | 70,927    | 17.8%    |
| 2001 | 53,487   | 15,124   | 68,611    | 22.0%    |
| 2002 | 55,076   | 15,068   | 70,144    | 21.5%    |
| 2003 | 56,106   | 16,043   | 72,149    | 22.2%    |
| 2004 | 56,498   | 16,142   | 72,640    | 22.2%    |
| 2005 | 54,080   | 18,245   | 72,325    | 25.2%    |
| 2006 | 55,643   | 19,903   | 75,545    | 26.3%    |
| 2007 | 55,759   | 21,261   | 77,020    | 27.6%    |
| 2008 | 53,199   | 21,024   | 74,223    | 28.3%    |
| 2009 | 51,497   | 19,028   | 70,524    | 27.0%    |
| 2010 | 52,955   | 19,813   | 72,767    | 27.2%    |
| 2011 | 52,950   | 20,140   | 73,090    | 27.6%    |
| 2012 | 50,703   | 22,766   | 73,469    | 31.0%    |
| 2013 | 48,330   | 25,431   | 73,761    | 34.5%    |
| 2014 | 45,536   | 28,509   | 74,046    | 38.5%    |
| 2015 | 42,736   | 31,612   | 74,347    | 42.5%    |
| 2016 | 40,879   | 34,106   | 74,985    | 45.5%    |
| 2017 | 39,760   | 36,414   | 76,174    | 47.8%    |
| 2018 | 38,460   | 38,313   | 76,773    | 49.9%    |
| 2019 | 37,266   | 39,926   | 77,193    | 51.7%    |
| 2020 | 36,497   | 41,208   | 77,705    | 53.0%    |
| 2021 | 36,457   | 42,506   | 78,963    | 53.8%    |
| 2022 | 36,664   | 43,574   | 80,238    | 54.3%    |
| 2023 | 36,983   | 44,592   | 81,575    | 54.7%    |
| 2024 | 37,304   | 45,642   | 82,946    | 55.0%    |
| 2025 | 37,665   | 46,688   | 84,353    | 55.3%    |
| 2026 | 38,125   | 47,646   | 85,771    | 55.6%    |
| 2027 | 38,681   | 48,529   | 87,209    | 55.6%    |
| 2028 | 39,305   | 49,390   | 88,695    | 55.7%    |
| 2029 | 39,969   | 50,255   | 90,223    | 55.7%    |
| 2030 | 40,674   | 51,153   | 91,826    | 55.7%    |

**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

| Material MSW          | Row Lat        | Ban          | Reuse     | Univer       | MF Org       | Educatio   | Junk Opt   | Paint      |
|-----------------------|----------------|--------------|-----------|--------------|--------------|------------|------------|------------|
|                       |                | Enforce      | Bag Res   | Org Serv     | Ban          | n          | Out        | Prod       |
|                       |                | 19           | 20        | 13           | 14           | 41         | 44         | 42         |
| Aluminum Beverage     | BALU           | 70           | -         | -            | -            | 4          | -          | -          |
| Beverage Glass        | BGLS           | 436          | -         | -            | -            | -          | -          | -          |
| Construction Debris   | CDEB           | -            | -         | -            | -            | -          | -          | -          |
| Container Glass       | CGLS           | 63           | -         | -            | -            | 3          | -          | -          |
| Computer Office Paper | CPO            | 190          | -         | -            | -            | 11         | 12         | -          |
| Food Cans             | FFER           | 155          | -         | -            | -            | 9          | -          | -          |
| Food                  | FOOD           | -            | -         | 4,499        | 3,916        | -          | -          | -          |
| Miscellaneous         | MISC           | -            | -         | -            | -            | -          | -          | 292        |
| Mixed Scrap Paper     | MWP            | 1,495        | -         | -            | -            | 83         | 234        | -          |
| Newspaper             | NP             | 247          | -         | -            | -            | 14         | -          | -          |
| Other Paper           | NRP            | -            | -         | 1,006        | 1,122        | -          | -          | -          |
| Other Aluminum        | OALU           | -            | -         | -            | -            | 6          | -          | -          |
| Corrugated Kraft      | OCC            | 622          | -         | -            | -            | 34         | -          | -          |
| Other Ferrous         | OFER           | -            | -         | -            | -            | 60         | -          | -          |
| Other Glass           | OGLS           | -            | -         | -            | -            | -          | -          | -          |
| Other NonFerrous      | ONFR           | -            | -         | -            | -            | -          | -          | -          |
| Other Organics        | OORG           | -            | -         | -            | -            | -          | -          | -          |
| Plastics              | PLST           | -            | 38        | -            | -            | -          | -          | -          |
| Wood                  | WOOD           | -            | -         | -            | -            | 119        | -          | -          |
| Yard                  | YARD           | 627          | -         | -            | -            | 35         | -          | -          |
| <b>Total</b>          | <b>Grand T</b> | <b>3,905</b> | <b>38</b> | <b>5,505</b> | <b>5,038</b> | <b>377</b> | <b>247</b> | <b>292</b> |

| Year |
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| 2026 |
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| 2028 |
| 2029 |
| 2030 |



Summary - Program Sector Materials Diversion by Program  
Recommended Year 2025 Commercial Sector

| Material MSW          |           | Total          | Total          | Total          | Percent           | Com Priv<br>Rec<br>30 | Ban Com<br>Org<br>32 | Foodware<br>Rec/Comp<br>35 | Enhanc<br>Com<br>Org<br>37 |
|-----------------------|-----------|----------------|----------------|----------------|-------------------|-----------------------|----------------------|----------------------------|----------------------------|
|                       |           | Disposed<br>1  | Recycled<br>2  | Generated<br>3 | Recycled<br>(2/3) |                       |                      |                            |                            |
| Aluminum Beverage     | BALU      | 189            | 1,431          | 1,620          | 88.3%             | 885                   | -                    | -                          | -                          |
| Beverage Glass        | BGLS      | 626            | 4,578          | 5,204          | 88.0%             | 2,771                 | -                    | -                          | -                          |
| Construction Debris   | CDEB      | 5,053          | 1,272          | 6,325          | 20.1%             | -                     | -                    | -                          | -                          |
| Container Glass       | CGLS      | 45             | 130            | 175            | 74.3%             | -                     | -                    | -                          | -                          |
| Computer Office Paper | CPO       | 5,424          | 20,461         | 25,886         | 79.0%             | 16,023                | -                    | -                          | -                          |
| Food Cans             | FFER      | 212            | 1,388          | 1,601          | 86.7%             | 775                   | -                    | -                          | -                          |
| Food                  | FOOD      | 8,790          | 64,957         | 73,746         | 88.1%             | 35,055                | 22,404               | 7,498                      | -                          |
| Miscellaneous         | MISC      | 16,411         | 30,850         | 47,260         | 65.3%             | 30,038                | -                    | -                          | -                          |
| Mixed Scrap Paper     | MWP       | 4,143          | 28,590         | 32,733         | 87.3%             | 25,197                | -                    | -                          | -                          |
| Newspaper             | NP        | 4,175          | 27,651         | 31,825         | 86.9%             | 23,919                | -                    | -                          | -                          |
| Other Paper           | NRP       | 5,821          | 12,528         | 18,349         | 68.3%             | -                     | 4,408                | 8,119                      | -                          |
| Other Aluminum        | OALU      | 134            | 365            | 499            | 73.2%             | -                     | -                    | -                          | -                          |
| Corrugated Kraft      | OCC       | 7,242          | 58,484         | 65,727         | 89.0%             | 52,004                | -                    | -                          | -                          |
| Other Ferrous         | OFER      | 1,009          | 11,412         | 12,421         | 91.9%             | 6,942                 | -                    | -                          | -                          |
| Other Glass           | OGLS      | 3,009          | 971            | 3,980          | 24.4%             | 971                   | -                    | -                          | -                          |
| Other NonFerrous      | ONFR      | 43             | 0              | 43             | 0.0%              | -                     | -                    | -                          | -                          |
| Other Organics        | OORG      | 5,094          | -              | 5,094          | 0.0%              | -                     | -                    | -                          | -                          |
| Plastics              | PLST      | 25,847         | 9,080          | 34,927         | 26.0%             | 4,407                 | -                    | 755                        | -                          |
| Wood                  | WOOD      | 3,772          | 8,977          | 12,749         | 70.4%             | -                     | -                    | -                          | -                          |
| Yard                  | YARD      | 3,650          | 21,052         | 24,701         | 85.2%             | 20,899                | -                    | -                          | -                          |
| <b>Total</b>          | <b>..</b> | <b>100,690</b> | <b>304,177</b> | <b>404,866</b> | <b>75.1%</b>      | <b>219,885</b>        | <b>26,812</b>        | <b>16,373</b>              | <b>-</b>                   |

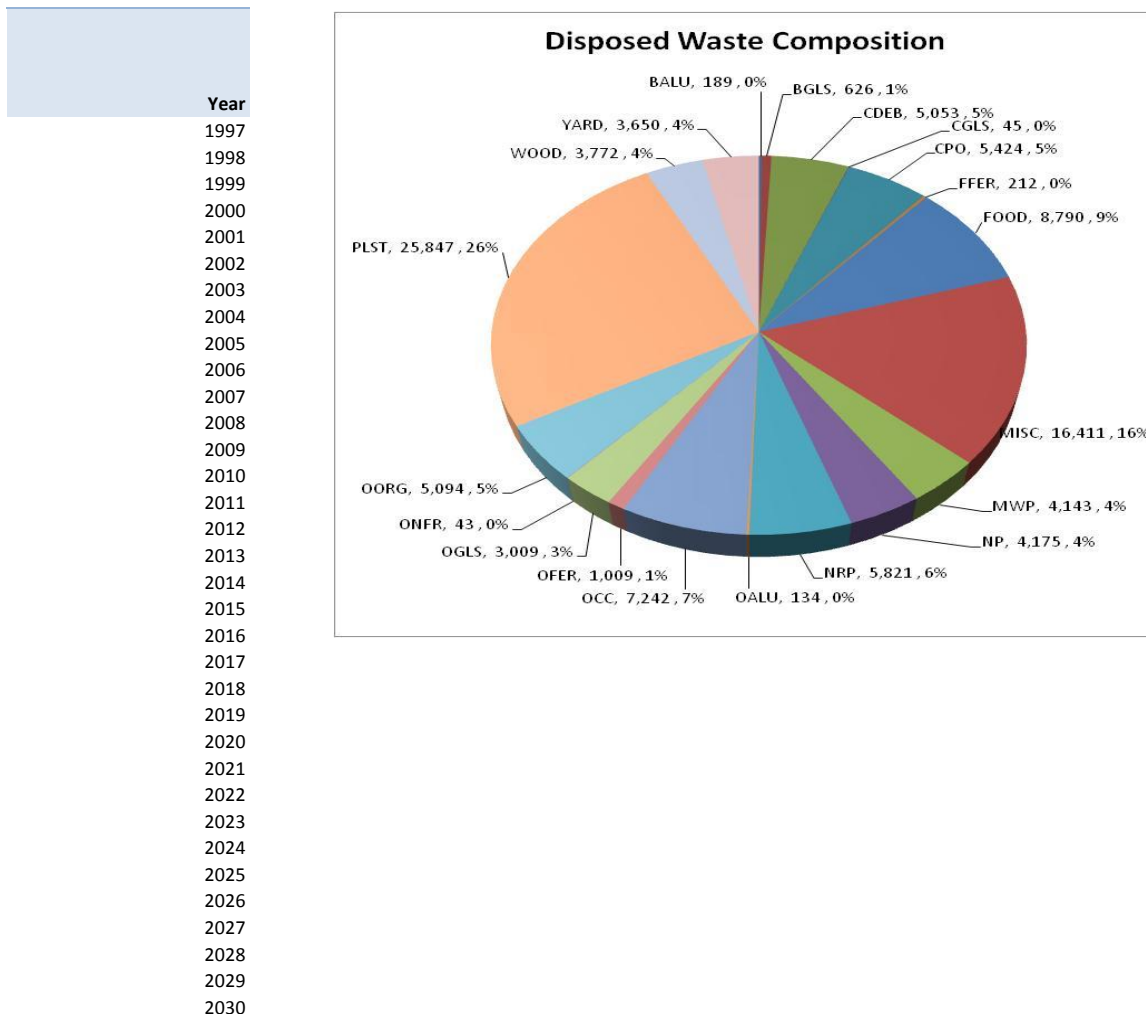
(in tons per year)

| Year | Total<br>Disposed<br>1 | Total<br>Recycled<br>2 | Total<br>Generated<br>3 | Percent<br>Recycled<br>(2/3) |
|------|------------------------|------------------------|-------------------------|------------------------------|
| 1997 | 208,670                | 194,323                | 402,994                 | 48.2%                        |
| 1998 | 213,646                | 194,251                | 407,896                 | 47.6%                        |
| 1999 | 225,348                | 199,968                | 425,316                 | 47.0%                        |
| 2000 | 228,417                | 162,989                | 391,405                 | 41.6%                        |
| 2001 | 228,405                | 149,453                | 377,858                 | 39.6%                        |
| 2002 | 217,195                | 149,025                | 366,220                 | 40.7%                        |
| 2003 | 213,247                | 126,956                | 340,202                 | 37.3%                        |
| 2004 | 216,112                | 159,341                | 375,453                 | 42.4%                        |
| 2005 | 205,819                | 179,265                | 385,083                 | 46.6%                        |
| 2006 | 201,231                | 215,258                | 416,489                 | 51.7%                        |
| 2007 | 198,493                | 219,894                | 418,387                 | 52.6%                        |
| 2008 | 176,774                | 213,493                | 390,267                 | 54.7%                        |
| 2009 | 151,398                | 184,593                | 335,992                 | 54.9%                        |
| 2010 | 171,363                | 207,450                | 378,813                 | 54.8%                        |
| 2011 | 169,610                | 210,521                | 380,131                 | 55.4%                        |
| 2012 | 166,665                | 216,824                | 383,489                 | 56.5%                        |
| 2013 | 160,445                | 224,014                | 384,460                 | 58.3%                        |
| 2014 | 151,526                | 234,242                | 385,769                 | 60.7%                        |
| 2015 | 141,536                | 244,879                | 386,415                 | 63.4%                        |
| 2016 | 136,103                | 251,099                | 387,203                 | 64.8%                        |
| 2017 | 128,921                | 259,003                | 387,925                 | 66.8%                        |
| 2018 | 128,020                | 261,135                | 389,155                 | 67.1%                        |
| 2019 | 118,120                | 272,598                | 390,718                 | 69.8%                        |
| 2020 | 109,019                | 284,337                | 393,356                 | 72.3%                        |
| 2021 | 103,348                | 292,427                | 395,775                 | 73.9%                        |
| 2022 | 100,897                | 297,162                | 398,060                 | 74.7%                        |
| 2023 | 100,201                | 300,074                | 400,275                 | 75.0%                        |
| 2024 | 100,283                | 302,255                | 402,538                 | 75.1%                        |
| 2025 | 100,690                | 304,177                | 404,866                 | 75.1%                        |
| 2026 | 101,232                | 306,036                | 407,268                 | 75.1%                        |
| 2027 | 101,824                | 307,849                | 409,674                 | 75.1%                        |
| 2028 | 102,442                | 309,701                | 412,143                 | 75.1%                        |
| 2029 | 103,084                | 311,574                | 414,658                 | 75.1%                        |
| 2030 | 103,730                | 313,412                | 417,142                 | 75.1%                        |



Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs

| Material MSW          |           | Com Paper     |                |                   | Plast Film Ban | Educati on Audits | ABC Ban  | Latex Paint |                |
|-----------------------|-----------|---------------|----------------|-------------------|----------------|-------------------|----------|-------------|----------------|
|                       |           | Ban Enforce   | Extend Com Ban | Restore Education |                |                   |          | Prod Stew   | Ban Clean Wood |
|                       |           | 38            | 39             | 41                | 50             | 43                | 22       | 42          | 45             |
| Aluminum Beverage     | BALU      | -             | 539            | 8                 | -              | 0                 | -        | -           | -              |
| Beverage Glass        | BGLS      | -             | 1,781          | 26                | -              | 0                 | -        | -           | -              |
| Construction Debris   | CDEB      | -             | -              | -                 | -              | -                 | -        | -           | -              |
| Container Glass       | CGLS      | -             | 128            | 2                 | -              | 0                 | -        | -           | -              |
| Computer Office Paper | CPO       | 4,438         | -              | -                 | -              | -                 | -        | -           | -              |
| Food Cans             | FFER      | -             | 604            | 9                 | -              | 0                 | -        | -           | -              |
| Food                  | FOOD      | -             | -              | -                 | -              | -                 | -        | -           | -              |
| Miscellaneous         | MISC      | -             | -              | -                 | -              | -                 | -        | 461         | -              |
| Mixed Scrap Paper     | MWP       | 3,391         | -              | -                 | -              | 2                 | -        | -           | -              |
| Newspaper             | NP        | 3,558         | -              | 174               | -              | -                 | -        | -           | -              |
| Other Paper           | NRP       | -             | -              | -                 | -              | -                 | -        | -           | -              |
| Other Aluminum        | OALU      | -             | 365            | -                 | -              | 0                 | -        | -           | -              |
| Corrugated Kraft      | OCC       | 6,175         | -              | 302               | -              | 4                 | -        | -           | -              |
| Other Ferrous         | OFER      | -             | -              | 219               | -              | 3                 | -        | -           | -              |
| Other Glass           | OGLS      | -             | -              | -                 | -              | -                 | -        | -           | -              |
| Other NonFerrous      | ONFR      | -             | -              | -                 | -              | 0                 | -        | -           | -              |
| Other Organics        | OORG      | -             | -              | -                 | -              | -                 | -        | -           | -              |
| Plastics              | PLST      | -             | 3,075          | -                 | -              | 5                 | -        | -           | -              |
| Wood                  | WOOD      | -             | -              | 510               | -              | -                 | -        | -           | -              |
| Yard                  | YARD      | -             | -              | 152               | -              | -                 | -        | -           | -              |
| <b>Total</b>          | <b>..</b> | <b>17,562</b> | <b>6,492</b>   | <b>1,402</b>      | <b>-</b>       | <b>14</b>         | <b>-</b> | <b>461</b>  | <b>-</b>       |



Summary - Program Sector Materials Diversion by Program  
Recommended Year 2025 Self Haul Sector

| Material MSW          |           | Total         | Total         | Total          | Percent     | Clean Green   | Drop Sites   | Carpet       | Ban              |                    |
|-----------------------|-----------|---------------|---------------|----------------|-------------|---------------|--------------|--------------|------------------|--------------------|
|                       |           | Disposed      | Recycled      | Generated      | Recycled    |               |              |              | Asphalt Shingles | Floor Sort 50% C&D |
|                       | .         | 1             | 2             | 3              | (2/3)       | 21            | 23           | 36           | 26               | 29                 |
| Aluminum Beverage     | BALU      | 51            | 22            | 73             | 30.1%       | -             | 4            | -            | -                | -                  |
| Beverage Glass        | BGLS      | 211           | 610           | 822            | 74.3%       | -             | 537          | -            | -                | -                  |
| Construction Debris   | CDEB      | 8,575         | 13,036        | 21,611         | 60.3%       | -             | -            | -            | 482              | 7,167              |
| Container Glass       | CGLS      | 42            | 15            | 57             | 25.7%       | -             | -            | -            | -                | -                  |
| Computer Office Paper | CPO       | 657           | 173           | 830            | 20.8%       | -             | -            | -            | -                | -                  |
| Food Cans             | FFER      | 48            | 17            | 65             | 25.7%       | -             | -            | -            | -                | -                  |
| Food                  | FOOD      | 2,523         | 360           | 2,883          | 12.5%       | -             | -            | -            | -                | -                  |
| Miscellaneous         | MISC      | 22,573        | 1,642         | 24,215         | 6.8%        | -             | 63           | 1,543        | -                | -                  |
| Mixed Scrap Paper     | MWP       | 1,161         | 1,093         | 2,253          | 48.5%       | -             | 477          | -            | -                | -                  |
| Newspaper             | NP        | 2             | 386           | 388            | 99.4%       | -             | 385          | -            | -                | -                  |
| Other Paper           | NRP       | 1,526         | -             | 1,526          | 0.0%        | -             | -            | -            | -                | -                  |
| Other Aluminum        | OALU      | 144           | 16            | 160            | 10.0%       | -             | -            | -            | -                | -                  |
| Corrugated Kraft      | OCC       | 1,036         | 2,703         | 3,739          | 72.3%       | -             | 1,006        | -            | -                | 750                |
| Other Ferrous         | OFER      | 2,117         | 7,859         | 9,976          | 78.8%       | -             | 5,036        | -            | -                | 1,533              |
| Other Glass           | OGLS      | 1,733         | -             | 1,733          | 0.0%        | -             | -            | -            | -                | -                  |
| Other NonFerrous      | ONFR      | 58            | 71            | 129            | 55.1%       | -             | -            | -            | -                | 42                 |
| Other Organics        | OORG      | 2,857         | -             | 2,857          | 0.0%        | -             | -            | -            | -                | -                  |
| Plastics              | PLST      | 6,103         | 162           | 6,265          | 2.6%        | -             | 27           | -            | -                | -                  |
| Wood                  | WOOD      | 18,665        | 18,979        | 37,644         | 50.4%       | -             | 244          | -            | -                | 8,925              |
| Yard                  | YARD      | 3,797         | 14,804        | 18,601         | 79.6%       | 14,081        | -            | -            | -                | -                  |
| <b>Total</b>          | <b>..</b> | <b>73,879</b> | <b>61,947</b> | <b>135,826</b> | <b>#N/A</b> | <b>14,081</b> | <b>7,779</b> | <b>1,543</b> | <b>482</b>       | <b>18,417</b>      |

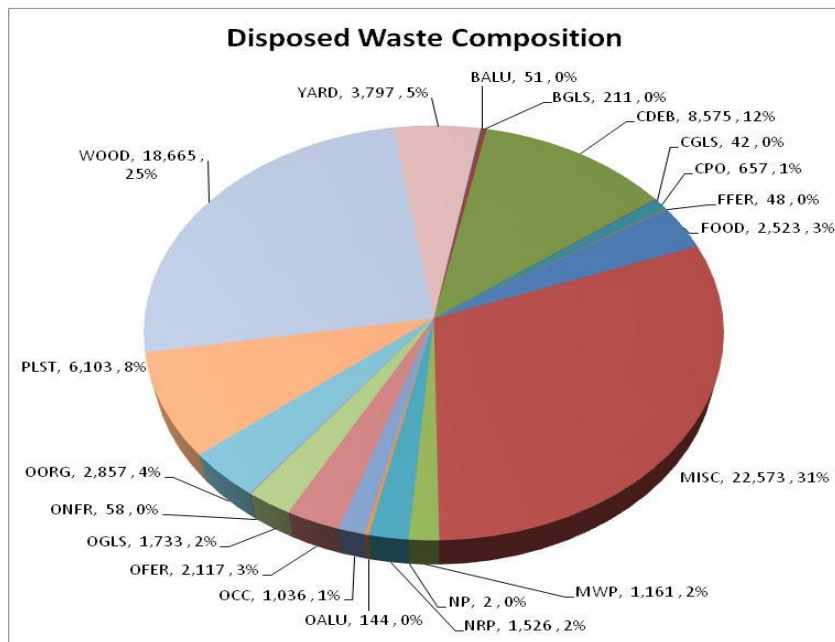
(in tons per year)

| Year | Total    | Total    | Total     | Percent  |
|------|----------|----------|-----------|----------|
|      | Disposed | Recycled | Generated | Recycled |
|      | 1        | 2        | 3         | (2/3)    |
| 1997 | 97,146   | 19,137   | 116,283   | 16.5%    |
| 1998 | 98,019   | 18,410   | 116,429   | 15.8%    |
| 1999 | 104,367  | 20,304   | 124,671   | 16.3%    |
| 2000 | 101,883  | 21,141   | 123,024   | 17.2%    |
| 2001 | 102,305  | 22,137   | 124,442   | 17.8%    |
| 2002 | 102,891  | 22,693   | 125,584   | 18.1%    |
| 2003 | 101,232  | 22,325   | 123,557   | 18.1%    |
| 2004 | 99,766   | 23,070   | 122,836   | 18.8%    |
| 2005 | 100,499  | 23,157   | 123,656   | 18.7%    |
| 2006 | 103,428  | 24,022   | 127,450   | 18.8%    |
| 2007 | 107,098  | 25,492   | 132,591   | 19.2%    |
| 2008 | 90,673   | 20,556   | 111,229   | 18.5%    |
| 2009 | 81,565   | 16,328   | 97,893    | 16.7%    |
| 2010 | 91,226   | 18,257   | 109,484   | 16.7%    |
| 2011 | 93,001   | 18,604   | 111,605   | 16.7%    |
| 2012 | 95,811   | 19,216   | 115,027   | 16.7%    |
| 2013 | 93,287   | 24,290   | 117,576   | 20.7%    |
| 2014 | 88,120   | 31,624   | 119,745   | 26.4%    |
| 2015 | 81,383   | 39,988   | 121,371   | 32.9%    |
| 2016 | 74,740   | 48,171   | 122,911   | 39.2%    |
| 2017 | 70,736   | 52,968   | 123,704   | 42.8%    |
| 2018 | 69,543   | 55,774   | 125,317   | 44.5%    |
| 2019 | 69,493   | 57,300   | 126,794   | 45.2%    |
| 2020 | 69,949   | 58,290   | 128,239   | 45.5%    |
| 2021 | 70,605   | 59,069   | 129,674   | 45.6%    |
| 2022 | 71,391   | 59,813   | 131,204   | 45.6%    |
| 2023 | 72,209   | 60,531   | 132,740   | 45.6%    |
| 2024 | 73,039   | 61,239   | 134,279   | 45.6%    |
| 2025 | 73,879   | 61,947   | 135,826   | 45.6%    |
| 2026 | 74,718   | 62,653   | 137,370   | 45.6%    |
| 2027 | 75,551   | 63,352   | 138,904   | 45.6%    |
| 2028 | 76,358   | 64,029   | 140,387   | 45.6%    |
| 2029 | 77,149   | 64,692   | 141,841   | 45.6%    |
| 2030 | 77,970   | 65,381   | 143,351   | 45.6%    |

Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs

| Material MSW          |           | Restore Education | Plast      |                   | Education Audits | Divert     |              | Ban Clean Wood |
|-----------------------|-----------|-------------------|------------|-------------------|------------------|------------|--------------|----------------|
|                       |           |                   | Film Ban   | Pre Scale Recycle |                  | Reuseables | ABC Ban      |                |
|                       | .         | 41                | 50         | 51                | 43               | 52         | 22           | 45             |
| Aluminum Beverage     | BALU      | 2                 | -          | 12                | 3                | -          | -            | -              |
| Beverage Glass        | BGLS      | 9                 | -          | 50                | 14               | -          | -            | -              |
| Construction Debris   | CDEB      | -                 | -          | -                 | 665              | -          | 4,722        | -              |
| Container Glass       | CGLS      | 2                 | -          | 10                | 3                | -          | -            | -              |
| Computer Office Paper | CPO       | 33                | -          | -                 | 139              | -          | -            | -              |
| Food Cans             | FFER      | 2                 | -          | 11                | 3                | -          | -            | -              |
| Food                  | FOOD      | -                 | -          | -                 | 360              | -          | -            | -              |
| Miscellaneous         | MISC      | -                 | -          | -                 | -                | 35         | -            | -              |
| Mixed Scrap Paper     | MWP       | 59                | -          | 311               | 246              | -          | -            | -              |
| Newspaper             | NP        | 0                 | -          | 0                 | -                | -          | -            | -              |
| Other Paper           | NRP       | -                 | -          | -                 | -                | -          | -            | -              |
| Other Aluminum        | OALU      | 6                 | -          | -                 | 10               | -          | -            | -              |
| Corrugated Kraft      | OCC       | 90                | -          | 478               | 379              | -          | -            | -              |
| Other Ferrous         | OFER      | 162               | -          | 860               | 243              | 25         | -            | -              |
| Other Glass           | OGLS      | -                 | -          | -                 | -                | -          | -            | -              |
| Other NonFerrous      | ONFR      | -                 | -          | 23                | 7                | -          | -            | -              |
| Other Organics        | OORG      | -                 | -          | -                 | -                | -          | -            | -              |
| Plastics              | PLST      | -                 | 104        | -                 | 31               | -          | -            | -              |
| Wood                  | WOOD      | 1,494             | -          | -                 | 829              | 47         | -            | 7,439          |
| Yard                  | YARD      | 181               | -          | -                 | 542              | -          | -            | -              |
| <b>Total</b>          | <b>..</b> | <b>2,041</b>      | <b>104</b> | <b>1,755</b>      | <b>3,476</b>     | <b>107</b> | <b>4,722</b> | <b>7,439</b>   |

| Year |
|------|
| 1997 |
| 1998 |
| 1999 |
| 2000 |
| 2001 |
| 2002 |
| 2003 |
| 2004 |
| 2005 |
| 2006 |
| 2007 |
| 2008 |
| 2009 |
| 2010 |
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| 2015 |
| 2016 |
| 2017 |
| 2018 |
| 2019 |
| 2020 |
| 2021 |
| 2022 |
| 2023 |
| 2024 |
| 2025 |
| 2026 |
| 2027 |
| 2028 |
| 2029 |
| 2030 |



**Summary of Recycling Program Benefits and Costs  
Scenario 31, Recommended**

*All Programs in Scenario*

| Year                                  | Present Value    | 2010         | 2011         | 2012          | 2013          | 2014          | 2015          |
|---------------------------------------|------------------|--------------|--------------|---------------|---------------|---------------|---------------|
| Program Benefits                      | \$93,144,347     | \$116,013    | \$262,341    | \$972,064     | \$2,126,512   | \$3,988,811   | \$6,018,053   |
| Program Cost                          | \$74,041,214     | \$431,561    | \$1,194,000  | \$1,910,605   | \$2,798,128   | \$3,973,167   | \$5,016,887   |
| Net Benefits                          | \$19,103,133     | (\$315,548)  | (\$931,659)  | (\$938,540)   | (\$671,616)   | \$15,644      | \$1,001,166   |
| <b>Tons avoided through recycling</b> | <b>2,492,448</b> | <b>1,840</b> | <b>4,161</b> | <b>11,746</b> | <b>26,284</b> | <b>48,719</b> | <b>73,379</b> |

1/13/2012 (All costs in 2010 dollars)

**12 Textile Market Dev**

| Year                                  | Present Value | 2010 | 2011 | 2012 | 2013 | 2014 | 2015       |
|---------------------------------------|---------------|------|------|------|------|------|------------|
| Program Benefits                      | \$1,594,928   | \$0  | \$0  | \$0  | \$0  | \$0  | \$0        |
| Program Cost                          | \$287,692     | \$0  | \$0  | \$0  | \$0  | \$0  | \$75,000   |
| Net Benefits                          | \$1,307,236   | \$0  | \$0  | \$0  | \$0  | \$0  | (\$75,000) |
| <b>Tons avoided through recycling</b> | <b>28,596</b> | -    | -    | -    | -    | -    | -          |
| PV per ton                            | \$46          |      |      |      |      |      |            |

**13 MF Univer Org Serv**

| Year                                  | Present Value | 2010 | 2011        | 2012         | 2013         | 2014         | 2015         |
|---------------------------------------|---------------|------|-------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$6,239,071   | \$0  | \$0         | \$228,037    | \$418,673    | \$593,199    | \$677,821    |
| Program Cost                          | \$3,389,494   | \$0  | \$200,000   | \$212,001    | \$213,632    | \$299,351    | \$340,913    |
| Net Benefits                          | \$2,849,577   | \$0  | (\$200,000) | \$16,036     | \$205,041    | \$293,848    | \$336,908    |
| <b>Tons avoided through recycling</b> | <b>94,700</b> | -    | -           | <b>1,647</b> | <b>3,024</b> | <b>4,285</b> | <b>4,896</b> |
| PV per ton                            | \$30          |      |             |              |              |              |              |

**14 MF Org Ban**

| Year                                  | Present Value | 2010 | 2011 | 2012 | 2013 | 2014        | 2015       |
|---------------------------------------|---------------|------|------|------|------|-------------|------------|
| Program Benefits                      | \$3,599,830   | \$0  | \$0  | \$0  | \$0  | \$0         | \$35,281   |
| Program Cost                          | \$1,981,153   | \$0  | \$0  | \$0  | \$0  | \$135,000   | \$97,328   |
| Net Benefits                          | \$1,618,677   | \$0  | \$0  | \$0  | \$0  | (\$135,000) | (\$62,047) |
| <b>Tons avoided through recycling</b> | <b>62,510</b> | -    | -    | -    | -    | -           | <b>255</b> |
| PV per ton                            | \$26          |      |      |      |      |             |            |

**15 Pet Waste & Diapers**

| Year                                  | Present Value | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---------------------------------------|---------------|------|------|------|------|------|------|
| Program Benefits                      | \$2,938,090   | \$0  | \$0  | \$0  | \$0  | \$0  | \$0  |
| Program Cost                          | \$3,534,864   | \$0  | \$0  | \$0  | \$0  | \$0  | \$0  |
| Net Benefits                          | (\$596,774)   | \$0  | \$0  | \$0  | \$0  | \$0  | \$0  |
| <b>Tons avoided through recycling</b> | <b>58,881</b> | -    | -    | -    | -    | -    | -    |
| PV per ton                            | (\$10)        |      |      |      |      |      |      |

**16 Plast Bag Ban Res**

| Year                                  | Present Value | 2010 | 2011 | 2012 | 2013 | 2014 | 2015        |
|---------------------------------------|---------------|------|------|------|------|------|-------------|
| Program Benefits                      | \$520,976     | \$0  | \$0  | \$0  | \$0  | \$0  | \$21,465    |
| Program Cost                          | (\$733,543)   | \$0  | \$0  | \$0  | \$0  | \$0  | (\$100,000) |
| Net Benefits                          | \$1,254,519   | \$0  | \$0  | \$0  | \$0  | \$0  | \$121,465   |
| <b>Tons avoided through recycling</b> | <b>8,609</b>  | -    | -    | -    | -    | -    | <b>155</b>  |
| PV per ton                            | \$146         |      |      |      |      |      |             |

**18 SF Org Ban**

| Year                                  | Present Value  | 2010 | 2011 | 2012 | 2013       | 2014         | 2015         |
|---------------------------------------|----------------|------|------|------|------------|--------------|--------------|
| Program Benefits                      | \$13,414,355   | \$0  | \$0  | \$0  | \$0        | \$260,454    | \$569,524    |
| Program Cost                          | \$11,470,744   | \$0  | \$0  | \$0  | \$90,000   | \$241,043    | \$483,344    |
| Net Benefits                          | \$1,943,612    | \$0  | \$0  | \$0  | (\$90,000) | \$19,411     | \$86,179     |
| <b>Tons avoided through recycling</b> | <b>219,771</b> | -    | -    | -    | -          | <b>1,881</b> | <b>4,114</b> |
| PV per ton                            | \$9            |      |      |      |            |              |              |

**19 Incr Res Ban Enforce**

| Year                                  | Present Value  | 2010 | 2011       | 2012         | 2013         | 2014         | 2015         |
|---------------------------------------|----------------|------|------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$9,051,551    | \$0  | \$0        | \$145,663    | \$321,920    | \$586,320    | \$842,646    |
| Program Cost                          | \$3,277,034    | \$0  | \$50,000   | \$108,064    | \$158,998    | \$235,380    | \$309,372    |
| Net Benefits                          | \$5,774,517    | \$0  | (\$50,000) | \$37,599     | \$162,921    | \$350,940    | \$533,274    |
| <b>Tons avoided through recycling</b> | <b>141,049</b> | -    | -          | <b>1,052</b> | <b>2,325</b> | <b>4,235</b> | <b>6,086</b> |
| PV per ton                            | \$41           |      |            |              |              |              |              |

**20 Reuse Bag Res**

| Year                                  | Present Value | 2010 | 2011 | 2012 | 2013 | 2014       | 2015       |
|---------------------------------------|---------------|------|------|------|------|------------|------------|
| Program Benefits                      | \$90,348      | \$0  | \$0  | \$0  | \$0  | \$1,346    | \$3,082    |
| Program Cost                          | \$200,307     | \$0  | \$0  | \$0  | \$0  | \$25,000   | \$25,000   |
| Net Benefits                          | (\$109,959)   | \$0  | \$0  | \$0  | \$0  | (\$23,654) | (\$21,918) |
| <b>Tons avoided through recycling</b> | <b>1,498</b>  | -    | -    | -    | -    | <b>10</b>  | <b>22</b>  |
| PV per ton                            | (\$73)        |      |      |      |      |            |            |

**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

*All Programs in Scenario*

| Year                                  | 2016          | 2017           | 2018           | 2019           | 2020           | 2021           |
|---------------------------------------|---------------|----------------|----------------|----------------|----------------|----------------|
| Program Benefits                      | \$7,732,125   | \$9,291,304    | \$10,108,935   | \$11,240,107   | \$12,200,744   | \$12,880,873   |
| Program Cost                          | \$5,630,296   | \$6,374,595    | \$7,275,358    | \$8,620,722    | \$9,035,307    | \$9,714,416    |
| Net Benefits                          | \$2,101,830   | \$2,916,709    | \$2,833,577    | \$2,619,385    | \$3,165,437    | \$3,166,457    |
| <b>Tons avoided through recycling</b> | <b>93,306</b> | <b>111,237</b> | <b>119,349</b> | <b>134,011</b> | <b>146,972</b> | <b>155,856</b> |

1/13/2012

**12 Textile Market Dev**

| Year                                  | 2016       | 2017       | 2018       | 2019       | 2020         | 2021         |
|---------------------------------------|------------|------------|------------|------------|--------------|--------------|
| Program Benefits                      | \$11,995   | \$30,741   | \$70,891   | \$137,975  | \$216,397    | \$281,276    |
| Program Cost                          | \$100,000  | \$60,000   | \$35,000   | \$25,000   | \$25,000     | \$25,000     |
| Net Benefits                          | (\$88,005) | (\$29,259) | \$35,891   | \$112,975  | \$191,397    | \$256,276    |
| <b>Tons avoided through recycling</b> | <b>87</b>  | <b>222</b> | <b>512</b> | <b>997</b> | <b>1,563</b> | <b>2,032</b> |

PV per ton

**13 MF Univer Org Serv**

| Year                                  | 2016         | 2017         | 2018         | 2019         | 2020         | 2021         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$695,942    | \$699,378    | \$698,591    | \$699,429    | \$702,868    | \$713,784    |
| Program Cost                          | \$349,813    | \$351,501    | \$351,114    | \$351,526    | \$353,215    | \$408,576    |
| Net Benefits                          | \$346,129    | \$347,877    | \$347,476    | \$347,903    | \$349,653    | \$305,207    |
| <b>Tons avoided through recycling</b> | <b>5,027</b> | <b>5,051</b> | <b>5,046</b> | <b>5,052</b> | <b>5,077</b> | <b>5,156</b> |

PV per ton

**14 MF Org Ban**

| Year                                  | 2016       | 2017         | 2018         | 2019         | 2020         | 2021         |
|---------------------------------------|------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$81,480   | \$176,832    | \$323,021    | \$469,985    | \$567,753    | \$623,040    |
| Program Cost                          | \$48,019   | \$94,851     | \$166,653    | \$238,834    | \$286,853    | \$314,007    |
| Net Benefits                          | \$33,461   | \$81,981     | \$156,369    | \$231,151    | \$280,900    | \$309,032    |
| <b>Tons avoided through recycling</b> | <b>589</b> | <b>1,277</b> | <b>2,333</b> | <b>3,395</b> | <b>4,101</b> | <b>4,500</b> |

PV per ton

**15 Pet Waste & Diapers**

| Year                                  | 2016     | 2017     | 2018     | 2019        | 2020       | 2021       |
|---------------------------------------|----------|----------|----------|-------------|------------|------------|
| Program Benefits                      | \$0      | \$0      | \$0      | \$0         | \$22,076   | \$57,821   |
| Program Cost                          | \$0      | \$0      | \$0      | \$345,000   | \$39,679   | \$117,145  |
| Net Benefits                          | \$0      | \$0      | \$0      | (\$345,000) | (\$17,603) | (\$59,324) |
| <b>Tons avoided through recycling</b> | <b>-</b> | <b>-</b> | <b>-</b> | <b>-</b>    | <b>159</b> | <b>418</b> |

PV per ton

**16 Plast Bag Ban Res**

| Year                                  | 2016        | 2017        | 2018        | 2019        | 2020        | 2021        |
|---------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Program Benefits                      | \$39,909    | \$58,899    | \$70,870    | \$76,481    | \$78,797    | \$80,427    |
| Program Cost                          | (\$100,000) | (\$100,000) | (\$100,000) | (\$100,000) | (\$100,000) | (\$100,000) |
| Net Benefits                          | \$139,909   | \$158,899   | \$170,870   | \$176,481   | \$178,797   | \$180,427   |
| <b>Tons avoided through recycling</b> | <b>288</b>  | <b>425</b>  | <b>512</b>  | <b>552</b>  | <b>569</b>  | <b>581</b>  |

PV per ton

**18 SF Org Ban**

| Year                                  | 2016         | 2017          | 2018          | 2019          | 2020          | 2021          |
|---------------------------------------|--------------|---------------|---------------|---------------|---------------|---------------|
| Program Benefits                      | \$1,044,600  | \$1,533,082   | \$1,835,049   | \$1,972,062   | \$2,023,274   | \$2,056,354   |
| Program Cost                          | \$886,533    | \$1,301,099   | \$1,557,373   | \$1,673,653   | \$1,717,116   | \$1,745,190   |
| Net Benefits                          | \$158,067    | \$231,983     | \$277,676     | \$298,409     | \$306,158     | \$311,164     |
| <b>Tons avoided through recycling</b> | <b>7,545</b> | <b>11,073</b> | <b>13,254</b> | <b>14,244</b> | <b>14,614</b> | <b>14,853</b> |

PV per ton

**19 Incr Res Ban Enforce**

| Year                                  | 2016         | 2017         | 2018         | 2019         | 2020         | 2021         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$1,006,795  | \$1,095,267  | \$1,127,063  | \$1,137,923  | \$1,142,668  | \$1,155,518  |
| Program Cost                          | \$356,693    | \$382,177    | \$391,237    | \$394,262    | \$395,519    | \$399,110    |
| Net Benefits                          | \$650,101    | \$713,090    | \$735,826    | \$743,661    | \$747,149    | \$756,407    |
| <b>Tons avoided through recycling</b> | <b>7,272</b> | <b>7,911</b> | <b>8,141</b> | <b>8,219</b> | <b>8,253</b> | <b>8,346</b> |

PV per ton

**20 Reuse Bag Res**

| Year                                  | 2016       | 2017       | 2018       | 2019       | 2020       | 2021       |
|---------------------------------------|------------|------------|------------|------------|------------|------------|
| Program Benefits                      | \$5,948    | \$9,292    | \$11,797   | \$13,166   | \$13,777   | \$14,149   |
| Program Cost                          | \$25,000   | \$25,000   | \$25,000   | \$25,000   | \$25,000   | \$25,000   |
| Net Benefits                          | (\$19,052) | (\$15,708) | (\$13,203) | (\$11,834) | (\$11,223) | (\$10,851) |
| <b>Tons avoided through recycling</b> | <b>43</b>  | <b>67</b>  | <b>85</b>  | <b>95</b>  | <b>100</b> | <b>102</b> |

PV per ton

**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

*All Programs in Scenario*

| Year                                  | 2022           | 2023           | 2024           | 2025           | 2026           | 2027           |
|---------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Program Benefits                      | \$13,333,450   | \$13,734,561   | \$14,175,003   | \$14,596,232   | \$14,911,114   | \$15,127,302   |
| Program Cost                          | \$10,114,484   | \$10,498,902   | \$10,880,129   | \$11,278,861   | \$11,490,449   | \$11,767,100   |
| Net Benefits                          | \$3,218,966    | \$3,235,658    | \$3,294,874    | \$3,317,371    | \$3,420,666    | \$3,360,203    |
| <b>Tons avoided through recycling</b> | <b>161,282</b> | <b>165,350</b> | <b>169,287</b> | <b>172,926</b> | <b>175,743</b> | <b>177,821</b> |

1/13/2012

**12 Textile Market Dev**

| Year                                  | 2022         | 2023         | 2024         | 2025         | 2026         | 2027         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$319,996    | \$339,693    | \$349,856    | \$356,078    | \$360,719    | \$364,793    |
| Program Cost                          | \$25,000     | \$25,000     | \$25,000     | \$25,000     | \$25,000     | \$25,000     |
| Net Benefits                          | \$294,996    | \$314,693    | \$324,856    | \$331,078    | \$335,719    | \$339,793    |
| <b>Tons avoided through recycling</b> | <b>2,311</b> | <b>2,454</b> | <b>2,527</b> | <b>2,572</b> | <b>2,605</b> | <b>2,635</b> |

PV per ton

**13 MF Univer Org Serv**

| Year                                  | 2022         | 2023         | 2024         | 2025         | 2026         | 2027         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$725,135    | \$737,150    | \$749,515    | \$762,220    | \$775,030    | \$788,021    |
| Program Cost                          | \$364,152    | \$370,053    | \$376,126    | \$382,366    | \$388,657    | \$395,038    |
| Net Benefits                          | \$360,983    | \$367,097    | \$373,389    | \$379,854    | \$386,372    | \$392,983    |
| <b>Tons avoided through recycling</b> | <b>5,238</b> | <b>5,324</b> | <b>5,414</b> | <b>5,505</b> | <b>5,598</b> | <b>5,692</b> |

PV per ton

**14 MF Org Ban**

| Year                                  | 2022         | 2023         | 2024         | 2025         | 2026         | 2027         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$652,310    | \$670,669    | \$684,788    | \$697,475    | \$709,602    | \$721,648    |
| Program Cost                          | \$328,384    | \$337,401    | \$384,335    | \$350,566    | \$356,522    | \$362,439    |
| Net Benefits                          | \$323,927    | \$333,269    | \$300,453    | \$346,909    | \$353,079    | \$359,209    |
| <b>Tons avoided through recycling</b> | <b>4,712</b> | <b>4,844</b> | <b>4,946</b> | <b>5,038</b> | <b>5,125</b> | <b>5,212</b> |

PV per ton

**15 Pet Waste & Diapers**

| Year                                  | 2022         | 2023         | 2024         | 2025         | 2026         | 2027         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$145,244    | \$328,919    | \$614,978    | \$905,070    | \$1,097,753  | \$1,195,242  |
| Program Cost                          | \$172,381    | \$377,643    | \$697,123    | \$1,020,801  | \$1,235,419  | \$1,343,601  |
| Net Benefits                          | (\$27,138)   | (\$48,724)   | (\$82,145)   | (\$115,731)  | (\$137,666)  | (\$148,359)  |
| <b>Tons avoided through recycling</b> | <b>1,049</b> | <b>2,376</b> | <b>4,442</b> | <b>6,537</b> | <b>7,929</b> | <b>8,633</b> |

PV per ton

**16 Plast Bag Ban Res**

| Year                                  | 2022        | 2023        | 2024        | 2025        | 2026        | 2027        |
|---------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Program Benefits                      | \$81,507    | \$82,426    | \$83,289    | \$84,147    | \$84,991    | \$85,838    |
| Program Cost                          | (\$100,000) | (\$100,000) | (\$100,000) | (\$100,000) | (\$100,000) | (\$100,000) |
| Net Benefits                          | \$181,507   | \$182,426   | \$183,289   | \$184,147   | \$184,991   | \$185,838   |
| <b>Tons avoided through recycling</b> | <b>589</b>  | <b>595</b>  | <b>602</b>  | <b>608</b>  | <b>614</b>  | <b>620</b>  |

PV per ton

**18 SF Org Ban**

| Year                                  | 2022          | 2023          | 2024          | 2025          | 2026          | 2027          |
|---------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Program Benefits                      | \$2,075,009   | \$2,089,326   | \$2,101,983   | \$2,114,270   | \$2,126,024   | \$2,137,634   |
| Program Cost                          | \$1,761,023   | \$1,793,173   | \$1,783,915   | \$1,794,343   | \$1,804,318   | \$1,814,171   |
| Net Benefits                          | \$313,987     | \$296,153     | \$318,068     | \$319,928     | \$321,706     | \$323,463     |
| <b>Tons avoided through recycling</b> | <b>14,987</b> | <b>15,091</b> | <b>15,182</b> | <b>15,271</b> | <b>15,356</b> | <b>15,440</b> |

PV per ton

**19 Incr Res Ban Enforce**

| Year                                  | 2022         | 2023         | 2024         | 2025         | 2026         | 2027         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$1,167,440  | \$1,179,721  | \$1,192,194  | \$1,204,964  | \$1,217,705  | \$1,230,553  |
| Program Cost                          | \$402,431    | \$405,853    | \$409,327    | \$412,884    | \$416,430    | \$420,004    |
| Net Benefits                          | \$765,009    | \$773,868    | \$782,867    | \$792,080    | \$801,275    | \$810,549    |
| <b>Tons avoided through recycling</b> | <b>8,432</b> | <b>8,521</b> | <b>8,611</b> | <b>8,703</b> | <b>8,795</b> | <b>8,888</b> |

PV per ton

**20 Reuse Bag Res**

| Year                                  | 2022       | 2023       | 2024       | 2025       | 2026       | 2027       |
|---------------------------------------|------------|------------|------------|------------|------------|------------|
| Program Benefits                      | \$14,369   | \$14,538   | \$14,690   | \$14,837   | \$14,980   | \$15,123   |
| Program Cost                          | \$25,000   | \$25,000   | \$25,000   | \$25,000   | \$25,000   | \$25,000   |
| Net Benefits                          | (\$10,631) | (\$10,462) | (\$10,310) | (\$10,163) | (\$10,020) | (\$9,877)  |
| <b>Tons avoided through recycling</b> | <b>104</b> | <b>105</b> | <b>106</b> | <b>107</b> | <b>108</b> | <b>109</b> |

PV per ton

**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

**All Programs in Scenario**

| Year                                  | 2028           | 2029           | 2030           |
|---------------------------------------|----------------|----------------|----------------|
| Program Benefits                      | \$15,292,710   | \$15,437,208   | \$15,577,702   |
| Program Cost                          | \$11,785,818   | \$11,899,828   | \$11,979,021   |
| Net Benefits                          | \$3,506,892    | \$3,537,380    | \$3,598,681    |
| <b>Tons avoided through recycling</b> | <b>179,523</b> | <b>181,068</b> | <b>182,586</b> |

1/13/2012

**12 Textile Market Dev**

| Year                                  | 2028         | 2029         | 2030         |
|---------------------------------------|--------------|--------------|--------------|
| Program Benefits                      | \$368,789    | \$372,828    | \$377,085    |
| Program Cost                          | \$25,000     | \$25,000     | \$25,000     |
| Net Benefits                          | \$343,789    | \$347,828    | \$352,085    |
| <b>Tons avoided through recycling</b> | <b>2,664</b> | <b>2,693</b> | <b>2,724</b> |

PV per ton

**13 MF Univer Org Serv**

| Year                                  | 2028         | 2029         | 2030         |
|---------------------------------------|--------------|--------------|--------------|
| Program Benefits                      | \$801,443    | \$815,257    | \$829,741    |
| Program Cost                          | \$401,630    | \$408,415    | \$415,529    |
| Net Benefits                          | \$399,813    | \$406,842    | \$414,212    |
| <b>Tons avoided through recycling</b> | <b>5,789</b> | <b>5,888</b> | <b>5,993</b> |

PV per ton

**14 MF Org Ban**

| Year                                  | 2028         | 2029         | 2030         |
|---------------------------------------|--------------|--------------|--------------|
| Program Benefits                      | \$733,996    | \$746,669    | \$759,942    |
| Program Cost                          | \$368,504    | \$374,728    | \$381,247    |
| Net Benefits                          | \$365,492    | \$371,941    | \$378,695    |
| <b>Tons avoided through recycling</b> | <b>5,302</b> | <b>5,393</b> | <b>5,489</b> |

PV per ton

**15 Pet Waste & Diapers**

| Year                                  | 2028         | 2029         | 2030         |
|---------------------------------------|--------------|--------------|--------------|
| Program Benefits                      | \$1,240,905  | \$1,264,347  | \$1,279,678  |
| Program Cost                          | \$1,393,871  | \$1,439,312  | \$1,435,686  |
| Net Benefits                          | (\$152,965)  | (\$174,965)  | (\$156,007)  |
| <b>Tons avoided through recycling</b> | <b>8,963</b> | <b>9,132</b> | <b>9,243</b> |

PV per ton

**16 Plast Bag Ban Res**

| Year                                  | 2028        | 2029        | 2030        |
|---------------------------------------|-------------|-------------|-------------|
| Program Benefits                      | \$86,718    | \$87,625    | \$88,591    |
| Program Cost                          | (\$100,000) | (\$100,000) | (\$100,000) |
| Net Benefits                          | \$186,718   | \$187,625   | \$188,591   |
| <b>Tons avoided through recycling</b> | <b>626</b>  | <b>633</b>  | <b>640</b>  |

PV per ton

**18 SF Org Ban**

| Year                                  | 2028          | 2029          | 2030          |
|---------------------------------------|---------------|---------------|---------------|
| Program Benefits                      | \$2,149,829   | \$2,162,505   | \$2,176,368   |
| Program Cost                          | \$1,824,521   | \$1,835,278   | \$1,847,044   |
| Net Benefits                          | \$325,308     | \$327,226     | \$329,324     |
| <b>Tons avoided through recycling</b> | <b>15,528</b> | <b>15,619</b> | <b>15,720</b> |

PV per ton

**19 Incr Res Ban Enforce**

| Year                                  | 2028         | 2029         | 2030         |
|---------------------------------------|--------------|--------------|--------------|
| Program Benefits                      | \$1,243,900  | \$1,257,678  | \$1,272,305  |
| Program Cost                          | \$423,718    | \$427,554    | \$444,131    |
| Net Benefits                          | \$820,181    | \$830,124    | \$828,174    |
| <b>Tons avoided through recycling</b> | <b>8,984</b> | <b>9,084</b> | <b>9,190</b> |

PV per ton

**20 Reuse Bag Res**

| Year                                  | 2028       | 2029       | 2030       |
|---------------------------------------|------------|------------|------------|
| Program Benefits                      | \$15,271   | \$15,425   | \$15,588   |
| Program Cost                          | \$25,000   | \$25,000   | \$25,000   |
| Net Benefits                          | (\$9,729)  | (\$9,575)  | (\$9,412)  |
| <b>Tons avoided through recycling</b> | <b>110</b> | <b>111</b> | <b>113</b> |

PV per ton

**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

**22 ABC Ban**

| Year                                  | Present Value | 2010 | 2011 | 2012       | 2013         | 2014         | 2015         |
|---------------------------------------|---------------|------|------|------------|--------------|--------------|--------------|
| Program Benefits                      | \$2,308,287   | \$0  | \$0  | \$0        | \$88,349     | \$166,598    | \$246,094    |
| Program Cost                          | \$831,746     | \$0  | \$0  | \$10,000   | \$48,025     | \$72,846     | \$98,063     |
| Net Benefits                          | \$1,476,541   | \$0  | \$0  | (\$10,000) | \$40,324     | \$93,751     | \$148,031    |
| <b>Tons avoided through recycling</b> | <b>78,424</b> | -    | -    | -          | <b>1,401</b> | <b>2,642</b> | <b>3,903</b> |
| PV per ton                            | \$19          |      |      |            |              |              |              |

**26 Ban Asphalt Shingles**

| Year                                  | Present Value | 2010 | 2011 | 2012 | 2013       | 2014       | 2015       |
|---------------------------------------|---------------|------|------|------|------------|------------|------------|
| Program Benefits                      | \$230,189     | \$0  | \$0  | \$0  | \$32,575   | \$34,977   | \$31,684   |
| Program Cost                          | \$201,298     | \$0  | \$0  | \$0  | \$26,142   | \$27,333   | \$25,701   |
| Net Benefits                          | \$28,892      | \$0  | \$0  | \$0  | \$6,433    | \$7,645    | \$5,983    |
| <b>Tons avoided through recycling</b> | <b>9,218</b>  | -    | -    | -    | <b>646</b> | <b>693</b> | <b>628</b> |
| PV per ton                            | \$3           |      |      |      |            |            |            |

**29 Floor Sort 50% C&D**

| Year                                  | Present Value  | 2010 | 2011 | 2012        | 2013         | 2014         | 2015         |
|---------------------------------------|----------------|------|------|-------------|--------------|--------------|--------------|
| Program Benefits                      | \$6,355,579    | \$0  | \$0  | \$0         | \$111,795    | \$248,965    | \$452,080    |
| Program Cost                          | \$13,152,521   | \$0  | \$0  | \$100,000   | \$332,516    | \$590,815    | \$973,290    |
| Net Benefits                          | (\$6,796,942)  | \$0  | \$0  | (\$100,000) | (\$220,721)  | (\$341,849)  | (\$521,210)  |
| <b>Tons avoided through recycling</b> | <b>279,558</b> | -    | -    | -           | <b>2,216</b> | <b>4,935</b> | <b>8,961</b> |
| PV per ton                            | (\$24)         |      |      |             |              |              |              |

**32 Ban Com Org**

| Year                                  | Present Value  | 2010 | 2011 | 2012 | 2013 | 2014 | 2015        |
|---------------------------------------|----------------|------|------|------|------|------|-------------|
| Program Benefits                      | \$7,910,477    | \$0  | \$0  | \$0  | \$0  | \$0  | \$0         |
| Program Cost                          | \$9,563,565    | \$0  | \$0  | \$0  | \$0  | \$0  | \$165,000   |
| Net Benefits                          | (\$1,653,087)  | \$0  | \$0  | \$0  | \$0  | \$0  | (\$165,000) |
| <b>Tons avoided through recycling</b> | <b>307,598</b> | -    | -    | -    | -    | -    | -           |
| PV per ton                            | (\$5)          |      |      |      |      |      |             |

**35 Foodware Rec/Comp**

| Year                                  | Present Value  | 2010         | 2011         | 2012         | 2013          | 2014          | 2015          |
|---------------------------------------|----------------|--------------|--------------|--------------|---------------|---------------|---------------|
| Program Benefits                      | \$9,168,490    | \$116,013    | \$262,341    | \$491,371    | \$719,876     | \$869,762     | \$942,005     |
| Program Cost                          | \$11,190,220   | \$431,561    | \$597,500    | \$857,225    | \$826,354     | \$996,328     | \$1,078,253   |
| Net Benefits                          | (\$2,021,729)  | (\$315,548)  | (\$335,159)  | (\$365,854)  | (\$106,478)   | (\$126,566)   | (\$136,248)   |
| <b>Tons avoided through recycling</b> | <b>296,758</b> | <b>1,840</b> | <b>4,161</b> | <b>7,793</b> | <b>11,418</b> | <b>13,795</b> | <b>14,941</b> |
| PV per ton                            | (\$7)          |              |              |              |               |               |               |

**36 Carpet**

| Year                                  | Present Value | 2010 | 2011 | 2012       | 2013       | 2014       | 2015         |
|---------------------------------------|---------------|------|------|------------|------------|------------|--------------|
| Program Benefits                      | \$726,189     | \$0  | \$0  | \$5,845    | \$14,937   | \$34,218   | \$64,362     |
| Program Cost                          | \$125,119     | \$0  | \$0  | \$50,000   | \$50,000   | \$50,000   | \$10,000     |
| Net Benefits                          | \$601,070     | \$0  | \$0  | (\$44,155) | (\$35,063) | (\$15,782) | \$54,362     |
| <b>Tons avoided through recycling</b> | <b>24,962</b> | -    | -    | <b>93</b>  | <b>237</b> | <b>543</b> | <b>1,021</b> |
| PV per ton                            | \$24          |      |      |            |            |            |              |

**37 Enhanc Com Org**

| Year                                  | Present Value | 2010 | 2011 | 2012       | 2013       | 2014         | 2015         |
|---------------------------------------|---------------|------|------|------------|------------|--------------|--------------|
| Program Benefits                      | \$277,278     | \$0  | \$0  | \$0        | \$58,981   | \$127,345    | \$231,411    |
| Program Cost                          | \$490,601     | \$0  | \$0  | \$95,000   | \$149,605  | \$180,805    | \$296,324    |
| Net Benefits                          | (\$213,323)   | \$0  | \$0  | (\$95,000) | (\$90,624) | (\$53,461)   | (\$64,913)   |
| <b>Tons avoided through recycling</b> | <b>6,625</b>  | -    | -    | -          | <b>935</b> | <b>2,020</b> | <b>3,670</b> |
| PV per ton                            | (\$32)        |      |      |            |            |              |              |

**38 Enhance Com Paper Ban Enforce**

| Year                                  | Present Value  | 2010 | 2011       | 2012       | 2013         | 2014         | 2015         |
|---------------------------------------|----------------|------|------------|------------|--------------|--------------|--------------|
| Program Benefits                      | \$7,670,922    | \$0  | \$0        | \$49,837   | \$125,637    | \$284,447    | \$529,783    |
| Program Cost                          | (\$429,133)    | \$0  | \$62,500   | \$61,649   | \$50,468     | \$27,044     | (\$9,144)    |
| Net Benefits                          | \$8,100,056    | \$0  | (\$62,500) | (\$11,812) | \$75,169     | \$257,403    | \$538,927    |
| <b>Tons avoided through recycling</b> | <b>268,793</b> | -    | -          | <b>790</b> | <b>1,993</b> | <b>4,511</b> | <b>8,403</b> |
| PV per ton                            | \$30           |      |            |            |              |              |              |

**39 Extend Com Ban**

| Year                                  | Present Value | 2010 | 2011 | 2012 | 2013 | 2014       | 2015         |
|---------------------------------------|---------------|------|------|------|------|------------|--------------|
| Program Benefits                      | \$2,568,181   | \$0  | \$0  | \$0  | \$0  | \$46,190   | \$104,365    |
| Program Cost                          | \$58,214      | \$0  | \$0  | \$0  | \$0  | \$133,187  | \$74,606     |
| Net Benefits                          | \$2,509,967   | \$0  | \$0  | \$0  | \$0  | (\$86,996) | \$29,759     |
| <b>Tons avoided through recycling</b> | <b>92,689</b> | -    | -    | -    | -    | <b>733</b> | <b>1,655</b> |
| PV per ton                            | \$27          |      |      |      |      |            |              |



**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

**22 ABC Ban**

| Year                                  | 2016         | 2017         | 2018         | 2019         | 2020         | 2021         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$299,355    | \$325,260    | \$269,741    | \$276,059    | \$280,392    | \$283,973    |
| Program Cost                          | \$114,958    | \$123,175    | \$90,564     | \$92,568     | \$93,943     | \$95,079     |
| Net Benefits                          | \$184,397    | \$202,084    | \$179,177    | \$183,490    | \$186,449    | \$188,894    |
| <b>Tons avoided through recycling</b> | <b>4,748</b> | <b>5,159</b> | <b>4,278</b> | <b>4,378</b> | <b>4,447</b> | <b>4,504</b> |
| PV per ton                            |              |              |              |              |              |              |

**26 Ban Asphalt Shingles**

| Year                                  | 2016       | 2017       | 2018       | 2019       | 2020       | 2021       |
|---------------------------------------|------------|------------|------------|------------|------------|------------|
| Program Benefits                      | \$27,368   | \$24,501   | \$23,372   | \$23,052   | \$23,084   | \$23,256   |
| Program Cost                          | \$23,562   | \$22,141   | \$21,582   | \$21,423   | \$21,439   | \$21,524   |
| Net Benefits                          | \$3,806    | \$2,360    | \$1,790    | \$1,629    | \$1,645    | \$1,732    |
| <b>Tons avoided through recycling</b> | <b>542</b> | <b>486</b> | <b>463</b> | <b>457</b> | <b>458</b> | <b>461</b> |
| PV per ton                            |            |            |            |            |            |            |

**29 Floor Sort 50% C&D**

| Year                                  | 2016          | 2017          | 2018          | 2019          | 2020          | 2021          |
|---------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Program Benefits                      | \$641,490     | \$760,225     | \$823,276     | \$854,456     | \$872,429     | \$885,288     |
| Program Cost                          | \$1,329,959   | \$1,553,544   | \$1,672,272   | \$1,730,986   | \$1,764,831   | \$1,789,043   |
| Net Benefits                          | (\$688,469)   | (\$793,319)   | (\$848,996)   | (\$876,530)   | (\$892,401)   | (\$903,755)   |
| <b>Tons avoided through recycling</b> | <b>12,715</b> | <b>15,069</b> | <b>16,319</b> | <b>16,937</b> | <b>17,293</b> | <b>17,548</b> |
| PV per ton                            |               |               |               |               |               |               |

**32 Ban Com Org**

| Year                                  | 2016         | 2017         | 2018         | 2019          | 2020          | 2021          |
|---------------------------------------|--------------|--------------|--------------|---------------|---------------|---------------|
| Program Benefits                      | \$77,806     | \$195,007    | \$440,365    | \$820,744     | \$1,209,317   | \$1,465,540   |
| Program Cost                          | \$267,864    | \$285,214    | \$560,287    | \$989,836     | \$1,428,636   | \$1,717,980   |
| Net Benefits                          | (\$190,057)  | (\$90,207)   | (\$119,923)  | (\$169,091)   | (\$219,319)   | (\$252,439)   |
| <b>Tons avoided through recycling</b> | <b>1,234</b> | <b>3,093</b> | <b>6,984</b> | <b>13,017</b> | <b>19,180</b> | <b>23,244</b> |
| PV per ton                            |              |              |              |               |               |               |

**35 Foodware Rec/Comp**

| Year                                  | 2016          | 2017          | 2018          | 2019          | 2020          | 2021          |
|---------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Program Benefits                      | \$972,696     | \$985,344     | \$992,220     | \$997,320     | \$1,006,719   | \$1,012,267   |
| Program Cost                          | \$1,113,057   | \$1,127,400   | \$1,135,198   | \$1,140,982   | \$1,151,640   | \$1,157,932   |
| Net Benefits                          | (\$140,361)   | (\$142,056)   | (\$142,978)   | (\$143,661)   | (\$144,921)   | (\$145,665)   |
| <b>Tons avoided through recycling</b> | <b>15,427</b> | <b>15,628</b> | <b>15,737</b> | <b>15,818</b> | <b>15,967</b> | <b>16,055</b> |
| PV per ton                            |               |               |               |               |               |               |

**36 Carpet**

| Year                                  | 2016         | 2017         | 2018         | 2019         | 2020         | 2021         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$95,171     | \$115,378    | \$85,477     | \$89,190     | \$91,256     | \$92,674     |
| Program Cost                          | \$10,000     | \$10,000     | \$0          | \$0          | \$0          | \$0          |
| Net Benefits                          | \$85,171     | \$105,378    | \$85,477     | \$89,190     | \$91,256     | \$92,674     |
| <b>Tons avoided through recycling</b> | <b>1,509</b> | <b>1,830</b> | <b>1,356</b> | <b>1,415</b> | <b>1,447</b> | <b>1,470</b> |
| PV per ton                            |              |              |              |              |              |              |

**37 Enhanc Com Org**

| Year                                  | 2016     | 2017     | 2018     | 2019     | 2020     | 2021     |
|---------------------------------------|----------|----------|----------|----------|----------|----------|
| Program Benefits                      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| Program Cost                          | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| Net Benefits                          | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| <b>Tons avoided through recycling</b> | <b>-</b> | <b>-</b> | <b>-</b> | <b>-</b> | <b>-</b> | <b>-</b> |
| PV per ton                            |          |          |          |          |          |          |

**38 Enhance Com Paper Ban Enfor**

| Year                                  | 2016          | 2017          | 2018          | 2019          | 2020          | 2021          |
|---------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Program Benefits                      | \$776,181     | \$936,894     | \$1,016,419   | \$1,052,028   | \$1,071,324   | \$1,081,746   |
| Program Cost                          | (\$45,488)    | (\$69,194)    | (\$80,924)    | (\$86,176)    | (\$89,022)    | (\$90,560)    |
| Net Benefits                          | \$821,669     | \$1,006,088   | \$1,097,343   | \$1,138,204   | \$1,160,346   | \$1,172,306   |
| <b>Tons avoided through recycling</b> | <b>12,311</b> | <b>14,860</b> | <b>16,121</b> | <b>16,686</b> | <b>16,992</b> | <b>17,157</b> |
| PV per ton                            |               |               |               |               |               |               |

**39 Extend Com Ban**

| Year                                  | 2016         | 2017         | 2018         | 2019         | 2020         | 2021         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$194,471    | \$285,008    | \$344,648    | \$374,420    | \$389,036    | \$396,205    |
| Program Cost                          | \$11,315     | (\$2,039)    | (\$10,836)   | (\$15,228)   | (\$17,384)   | (\$18,441)   |
| Net Benefits                          | \$183,155    | \$287,047    | \$355,485    | \$389,647    | \$406,419    | \$414,646    |
| <b>Tons avoided through recycling</b> | <b>3,084</b> | <b>4,520</b> | <b>5,466</b> | <b>5,938</b> | <b>6,170</b> | <b>6,284</b> |
| PV per ton                            |              |              |              |              |              |              |

**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

**22 ABC Ban**

| Year                                  | 2022         | 2023         | 2024         | 2025         | 2026         | 2027         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$287,489    | \$290,917    | \$294,312    | \$297,712    | \$301,100    | \$304,462    |
| Program Cost                          | \$96,194     | \$97,281     | \$98,358     | \$99,437     | \$100,511    | \$101,578    |
| Net Benefits                          | \$191,295    | \$193,636    | \$195,953    | \$198,275    | \$200,588    | \$202,884    |
| <b>Tons avoided through recycling</b> | <b>4,560</b> | <b>4,614</b> | <b>4,668</b> | <b>4,722</b> | <b>4,776</b> | <b>4,829</b> |
| PV per ton                            |              |              |              |              |              |              |

**26 Ban Asphalt Shingles**

| Year                                  | 2022       | 2023       | 2024       | 2025       | 2026       | 2027       |
|---------------------------------------|------------|------------|------------|------------|------------|------------|
| Program Benefits                      | \$23,498   | \$23,761   | \$24,032   | \$24,307   | \$24,583   | \$24,857   |
| Program Cost                          | \$21,644   | \$21,774   | \$21,909   | \$22,045   | \$22,182   | \$22,318   |
| Net Benefits                          | \$1,854    | \$1,986    | \$2,123    | \$2,262    | \$2,401    | \$2,539    |
| <b>Tons avoided through recycling</b> | <b>466</b> | <b>471</b> | <b>476</b> | <b>482</b> | <b>487</b> | <b>493</b> |
| PV per ton                            |            |            |            |            |            |            |

**29 Floor Sort 50% C&D**

| Year                                  | 2022          | 2023          | 2024          | 2025          | 2026          | 2027          |
|---------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Program Benefits                      | \$896,889     | \$907,823     | \$918,504     | \$929,149     | \$939,735     | \$950,233     |
| Program Cost                          | \$1,910,889   | \$1,831,478   | \$1,851,591   | \$1,871,637   | \$1,891,570   | \$1,911,339   |
| Net Benefits                          | (\$1,014,000) | (\$923,655)   | (\$933,087)   | (\$942,488)   | (\$951,835)   | (\$961,106)   |
| <b>Tons avoided through recycling</b> | <b>17,778</b> | <b>17,995</b> | <b>18,206</b> | <b>18,417</b> | <b>18,627</b> | <b>18,835</b> |
| PV per ton                            |               |               |               |               |               |               |

**32 Ban Com Org**

| Year                                  | 2022          | 2023          | 2024          | 2025          | 2026          | 2027          |
|---------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Program Benefits                      | \$1,593,043   | \$1,649,899   | \$1,676,297   | \$1,690,482   | \$1,700,269   | \$1,707,975   |
| Program Cost                          | \$1,861,964   | \$1,926,169   | \$1,955,979   | \$2,046,998   | \$1,983,050   | \$1,991,753   |
| Net Benefits                          | (\$268,921)   | (\$276,270)   | (\$279,682)   | (\$356,516)   | (\$282,781)   | (\$283,777)   |
| <b>Tons avoided through recycling</b> | <b>25,266</b> | <b>26,168</b> | <b>26,587</b> | <b>26,812</b> | <b>26,967</b> | <b>27,089</b> |
| PV per ton                            |               |               |               |               |               |               |

**35 Foodware Rec/Comp**

| Year                                  | 2022          | 2023          | 2024          | 2025          | 2026          | 2027          |
|---------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Program Benefits                      | \$1,017,439   | \$1,022,319   | \$1,027,274   | \$1,032,327   | \$1,037,579   | \$1,042,936   |
| Program Cost                          | \$1,163,796   | \$1,169,331   | \$1,174,950   | \$1,180,681   | \$1,186,636   | \$1,192,711   |
| Net Benefits                          | (\$146,358)   | (\$147,012)   | (\$147,676)   | (\$148,353)   | (\$149,057)   | (\$149,775)   |
| <b>Tons avoided through recycling</b> | <b>16,137</b> | <b>16,214</b> | <b>16,293</b> | <b>16,373</b> | <b>16,456</b> | <b>16,541</b> |
| PV per ton                            |               |               |               |               |               |               |

**36 Carpet**

| Year                                  | 2022         | 2023         | 2024         | 2025         | 2026         | 2027         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$93,916     | \$95,071     | \$96,194     | \$97,310     | \$98,419     | \$99,519     |
| Program Cost                          | \$0          | \$0          | \$0          | \$0          | \$0          | \$0          |
| Net Benefits                          | \$93,916     | \$95,071     | \$96,194     | \$97,310     | \$98,419     | \$99,519     |
| <b>Tons avoided through recycling</b> | <b>1,490</b> | <b>1,508</b> | <b>1,526</b> | <b>1,543</b> | <b>1,561</b> | <b>1,578</b> |
| PV per ton                            |              |              |              |              |              |              |

**37 Enhanc Com Org**

| Year                                  | 2022     | 2023     | 2024     | 2025     | 2026     | 2027     |
|---------------------------------------|----------|----------|----------|----------|----------|----------|
| Program Benefits                      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| Program Cost                          | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| Net Benefits                          | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| <b>Tons avoided through recycling</b> | <b>-</b> | <b>-</b> | <b>-</b> | <b>-</b> | <b>-</b> | <b>-</b> |
| PV per ton                            |          |          |          |          |          |          |

**38 Enhance Com Paper Ban Enfor**

| Year                                  | 2022          | 2023          | 2024          | 2025          | 2026          | 2027          |
|---------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Program Benefits                      | \$1,089,206   | \$1,095,400   | \$1,101,313   | \$1,107,282   | \$1,113,391   | \$1,119,540   |
| Program Cost                          | (\$91,660)    | (\$92,574)    | (\$93,446)    | (\$94,326)    | (\$95,227)    | (\$96,134)    |
| Net Benefits                          | \$1,180,866   | \$1,187,974   | \$1,194,759   | \$1,201,608   | \$1,208,619   | \$1,215,674   |
| <b>Tons avoided through recycling</b> | <b>17,275</b> | <b>17,374</b> | <b>17,467</b> | <b>17,562</b> | <b>17,659</b> | <b>17,756</b> |
| PV per ton                            |               |               |               |               |               |               |

**39 Extend Com Ban**

| Year                                  | 2022         | 2023         | 2024         | 2025         | 2026         | 2027         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$400,488    | \$403,665    | \$406,522    | \$409,316    | \$412,132    | \$414,974    |
| Program Cost                          | (\$19,073)   | (\$19,541)   | \$20,037     | (\$20,375)   | (\$20,790)   | (\$21,210)   |
| Net Benefits                          | \$419,561    | \$423,206    | \$386,485    | \$429,691    | \$432,922    | \$436,184    |
| <b>Tons avoided through recycling</b> | <b>6,352</b> | <b>6,402</b> | <b>6,448</b> | <b>6,492</b> | <b>6,537</b> | <b>6,582</b> |
| PV per ton                            |              |              |              |              |              |              |

**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

**22 ABC Ban**

| Year                                  | 2028         | 2029         | 2030         |
|---------------------------------------|--------------|--------------|--------------|
| Program Benefits                      | \$307,714    | \$310,902    | \$314,210    |
| Program Cost                          | \$102,609    | \$103,621    | \$104,670    |
| Net Benefits                          | \$205,104    | \$207,281    | \$209,540    |
| <b>Tons avoided through recycling</b> | <b>4,880</b> | <b>4,931</b> | <b>4,984</b> |
| PV per ton                            |              |              |              |

**26 Ban Asphalt Shingles**

| Year                                  | 2028       | 2029       | 2030       |
|---------------------------------------|------------|------------|------------|
| Program Benefits                      | \$25,122   | \$25,382   | \$25,652   |
| Program Cost                          | \$22,449   | \$22,578   | \$22,712   |
| Net Benefits                          | \$2,673    | \$2,804    | \$2,941    |
| <b>Tons avoided through recycling</b> | <b>498</b> | <b>503</b> | <b>508</b> |
| PV per ton                            |            |            |            |

**29 Floor Sort 50% C&D**

| Year                                  | 2028          | 2029          | 2030          |
|---------------------------------------|---------------|---------------|---------------|
| Program Benefits                      | \$960,384     | \$970,334     | \$980,660     |
| Program Cost                          | \$1,930,454   | \$1,949,189   | \$1,968,634   |
| Net Benefits                          | (\$970,070)   | (\$978,856)   | (\$987,974)   |
| <b>Tons avoided through recycling</b> | <b>19,036</b> | <b>19,234</b> | <b>19,438</b> |
| PV per ton                            |               |               |               |

**32 Ban Com Org**

| Year                                  | 2028          | 2029          | 2030          |
|---------------------------------------|---------------|---------------|---------------|
| Program Benefits                      | \$1,715,690   | \$1,722,742   | \$1,728,883   |
| Program Cost                          | \$2,000,464   | \$2,008,428   | \$2,015,363   |
| Net Benefits                          | (\$284,774)   | (\$285,686)   | (\$286,480)   |
| <b>Tons avoided through recycling</b> | <b>27,212</b> | <b>27,323</b> | <b>27,421</b> |
| PV per ton                            |               |               |               |

**35 Foodware Rec/Comp**

| Year                                  | 2028          | 2029          | 2030          |
|---------------------------------------|---------------|---------------|---------------|
| Program Benefits                      | \$1,048,558   | \$1,054,300   | \$1,059,908   |
| Program Cost                          | \$1,199,086   | \$1,205,597   | \$1,211,957   |
| Net Benefits                          | (\$150,528)   | (\$151,298)   | (\$152,049)   |
| <b>Tons avoided through recycling</b> | <b>16,631</b> | <b>16,722</b> | <b>16,811</b> |
| PV per ton                            |               |               |               |

**36 Carpet**

| Year                                  | 2028         | 2029         | 2030         |
|---------------------------------------|--------------|--------------|--------------|
| Program Benefits                      | \$100,582    | \$101,624    | \$102,706    |
| Program Cost                          | \$0          | \$0          | \$0          |
| Net Benefits                          | \$100,582    | \$101,624    | \$102,706    |
| <b>Tons avoided through recycling</b> | <b>1,595</b> | <b>1,612</b> | <b>1,629</b> |
| PV per ton                            |              |              |              |

**37 Enhanc Com Org**

| Year                                  | 2028     | 2029     | 2030     |
|---------------------------------------|----------|----------|----------|
| Program Benefits                      | \$0      | \$0      | \$0      |
| Program Cost                          | \$0      | \$0      | \$0      |
| Net Benefits                          | \$0      | \$0      | \$0      |
| <b>Tons avoided through recycling</b> | <b>-</b> | <b>-</b> | <b>-</b> |
| PV per ton                            |          |          |          |

**38 Enhance Com Paper Ban Enfor**

| Year                                  | 2028          | 2029          | 2030          |
|---------------------------------------|---------------|---------------|---------------|
| Program Benefits                      | \$1,125,893   | \$1,132,356   | \$1,138,703   |
| Program Cost                          | (\$97,071)    | (\$98,025)    | (\$98,961)    |
| Net Benefits                          | \$1,222,965   | \$1,230,381   | \$1,237,664   |
| <b>Tons avoided through recycling</b> | <b>17,857</b> | <b>17,960</b> | <b>18,060</b> |
| PV per ton                            |               |               |               |

**39 Extend Com Ban**

| Year                                  | 2028         | 2029         | 2030         |
|---------------------------------------|--------------|--------------|--------------|
| Program Benefits                      | \$417,872    | \$420,874    | \$423,879    |
| Program Cost                          | (\$21,637)   | (\$22,080)   | (\$22,523)   |
| Net Benefits                          | \$439,509    | \$442,953    | \$446,402    |
| <b>Tons avoided through recycling</b> | <b>6,628</b> | <b>6,675</b> | <b>6,723</b> |
| PV per ton                            |              |              |              |

**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

**41 Restore Education**

| Year                                  | Present Value | 2010 | 2011 | 2012        | 2013        | 2014         | 2015         |
|---------------------------------------|---------------|------|------|-------------|-------------|--------------|--------------|
| Program Benefits                      | \$3,838,317   | \$0  | \$0  | \$0         | \$71,854    | \$157,914    | \$282,982    |
| Program Cost                          | \$4,734,109   | \$0  | \$0  | \$300,000   | \$589,387   | \$574,752    | \$551,123    |
| Net Benefits                          | (\$895,791)   | \$0  | \$0  | (\$300,000) | (\$517,534) | (\$416,838)  | (\$268,140)  |
| <b>Tons avoided through recycling</b> | <b>61,311</b> | -    | -    | -           | <b>519</b>  | <b>1,141</b> | <b>2,044</b> |
| PV per ton                            | (\$15)        |      |      |             |             |              |              |

**42 Latex Paint Prod Stew**

| Year                                  | Present Value | 2010 | 2011 | 2012 | 2013 | 2014 | 2015       |
|---------------------------------------|---------------|------|------|------|------|------|------------|
| Program Benefits                      | \$717,130     | \$0  | \$0  | \$0  | \$0  | \$0  | \$28,924   |
| Program Cost                          | \$18,000      | \$0  | \$0  | \$0  | \$0  | \$0  | \$7,500    |
| Net Benefits                          | \$699,130     | \$0  | \$0  | \$0  | \$0  | \$0  | \$21,424   |
| <b>Tons avoided through recycling</b> | <b>11,872</b> | -    | -    | -    | -    | -    | <b>209</b> |
| PV per ton                            | \$59          |      |      |      |      |      |            |

**43 New Education - Com**

| Year                                  | Present Value | 2010 | 2011 | 2012 | 2013       | 2014       | 2015         |
|---------------------------------------|---------------|------|------|------|------------|------------|--------------|
| Program Benefits                      | \$1,501,482   | \$0  | \$0  | \$0  | \$25,251   | \$57,196   | \$106,036    |
| Program Cost                          | (\$341,914)   | \$0  | \$0  | \$0  | \$92,333   | \$63,660   | \$19,839     |
| Net Benefits                          | \$1,843,395   | \$0  | \$0  | \$0  | (\$67,082) | (\$6,463)  | \$86,198     |
| <b>Tons avoided through recycling</b> | <b>52,883</b> | -    | -    | -    | <b>400</b> | <b>907</b> | <b>1,682</b> |
| PV per ton                            | \$35          |      |      |      |            |            |              |

**44 Phone & Junk Opt Out**

| Year                                  | Present Value | 2010 | 2011        | 2012       | 2013       | 2014         | 2015         |
|---------------------------------------|---------------|------|-------------|------------|------------|--------------|--------------|
| Program Benefits                      | \$3,410,079   | \$0  | \$0         | \$51,311   | \$115,481  | \$214,916    | \$315,807    |
| Program Cost                          | \$1,245,287   | \$0  | \$284,000   | \$116,666  | \$100,666  | \$83,266     | \$183,266    |
| Net Benefits                          | \$2,164,791   | \$0  | (\$284,000) | (\$65,355) | \$14,815   | \$131,650    | \$132,541    |
| <b>Tons avoided through recycling</b> | <b>53,068</b> | -    | -           | <b>371</b> | <b>834</b> | <b>1,552</b> | <b>2,281</b> |
| PV per ton                            | \$41          |      |             |            |            |              |              |

**45 Ban Clean Wood**

| Year                                  | Present Value  | 2010 | 2011 | 2012 | 2013       | 2014         | 2015         |
|---------------------------------------|----------------|------|------|------|------------|--------------|--------------|
| Program Benefits                      | \$3,868,789    | \$0  | \$0  | \$0  | \$0        | \$265,990    | \$475,172    |
| Program Cost                          | \$2,367,728    | \$0  | \$0  | \$0  | \$10,000   | \$177,358    | \$301,109    |
| Net Benefits                          | \$1,501,061    | \$0  | \$0  | \$0  | (\$10,000) | \$88,632     | \$174,063    |
| <b>Tons avoided through recycling</b> | <b>130,015</b> | -    | -    | -    | -          | <b>4,219</b> | <b>7,536</b> |
| PV per ton                            | \$12           |      |      |      |            |              |              |

**46 Com C&D Ban**

| Year                                  | Present Value  | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---------------------------------------|----------------|------|------|------|------|------|------|
| Program Benefits                      | \$4,388,718    | \$0  | \$0  | \$0  | \$0  | \$0  | \$0  |
| Program Cost                          | \$5,846,353    | \$0  | \$0  | \$0  | \$0  | \$0  | \$0  |
| Net Benefits                          | (\$1,457,634)  | \$0  | \$0  | \$0  | \$0  | \$0  | \$0  |
| <b>Tons avoided through recycling</b> | <b>172,010</b> | -    | -    | -    | -    | -    | -    |
| PV per ton                            | (\$8)          |      |      |      |      |      |      |

**50 Plast Film Ban**

| Year                                  | Present Value | 2010 | 2011 | 2012 | 2013       | 2014       | 2015       |
|---------------------------------------|---------------|------|------|------|------------|------------|------------|
| Program Benefits                      | \$194,859     | \$0  | \$0  | \$0  | \$21,184   | \$38,973   | \$56,231   |
| Program Cost                          | \$92,767      | \$0  | \$0  | \$0  | \$60,000   | \$60,000   | \$10,000   |
| Net Benefits                          | \$102,093     | \$0  | \$0  | \$0  | (\$38,816) | (\$21,027) | \$46,231   |
| <b>Tons avoided through recycling</b> | <b>5,351</b>  | -    | -    | -    | <b>336</b> | <b>618</b> | <b>892</b> |
| PV per ton                            | \$19          |      |      |      |            |            |            |

**51 Pre Scale Recycle**

| Year                                  | Present Value | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---------------------------------------|---------------|------|------|------|------|------|------|
| Program Benefits                      | \$527,198     | \$0  | \$0  | \$0  | \$0  | \$0  | \$0  |
| Program Cost                          | \$1,479,653   | \$0  | \$0  | \$0  | \$0  | \$0  | \$0  |
| Net Benefits                          | (\$952,455)   | \$0  | \$0  | \$0  | \$0  | \$0  | \$0  |
| <b>Tons avoided through recycling</b> | <b>24,194</b> | -    | -    | -    | -    | -    | -    |
| PV per ton                            | (\$39)        |      |      |      |      |      |      |

**52 Divert Reuseables**

| Year                                  | Present Value | 2010 | 2011 | 2012 | 2013 | 2014 | 2015      |
|---------------------------------------|---------------|------|------|------|------|------|-----------|
| Program Benefits                      | \$33,032      | \$0  | \$0  | \$0  | \$0  | \$0  | \$1,299   |
| Program Cost                          | \$7,335       | \$0  | \$0  | \$0  | \$0  | \$0  | \$1,000   |
| Net Benefits                          | \$25,696      | \$0  | \$0  | \$0  | \$0  | \$0  | \$299     |
| <b>Tons avoided through recycling</b> | <b>1,503</b>  | -    | -    | -    | -    | -    | <b>26</b> |
| PV per ton                            | \$17          |      |      |      |      |      |           |

**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

**41 Restore Education**

| Year                                  | 2016         | 2017         | 2018         | 2019         | 2020         | 2021         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$397,322    | \$466,760    | \$500,552    | \$516,215    | \$524,704    | \$531,568    |
| Program Cost                          | \$528,028    | \$513,360    | \$505,488    | \$501,571    | \$499,325    | \$497,880    |
| Net Benefits                          | (\$130,705)  | (\$46,600)   | (\$4,936)    | \$14,645     | \$25,380     | \$33,688     |
| <b>Tons avoided through recycling</b> | <b>2,870</b> | <b>3,371</b> | <b>3,615</b> | <b>3,729</b> | <b>3,790</b> | <b>3,839</b> |
| PV per ton                            |              |              |              |              |              |              |

**42 Latex Paint Prod Stew**

| Year                                  | 2016       | 2017       | 2018       | 2019       | 2020       | 2021       |
|---------------------------------------|------------|------------|------------|------------|------------|------------|
| Program Benefits                      | \$54,024   | \$79,638   | \$96,407   | \$104,724  | \$108,531  | \$110,879  |
| Program Cost                          | \$7,500    | \$7,500    | \$7,500    | \$0        | \$0        | \$0        |
| Net Benefits                          | \$46,524   | \$72,138   | \$88,907   | \$104,724  | \$108,531  | \$110,879  |
| <b>Tons avoided through recycling</b> | <b>390</b> | <b>575</b> | <b>696</b> | <b>756</b> | <b>784</b> | <b>801</b> |
| PV per ton                            |            |            |            |            |            |            |

**43 New Education - Com**

| Year                                  | 2016         | 2017         | 2018         | 2019         | 2020         | 2021         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$151,093    | \$179,793    | \$194,889    | \$202,310    | \$206,576    | \$209,622    |
| Program Cost                          | (\$20,538)   | (\$46,181)   | (\$59,608)   | (\$66,189)   | (\$69,977)   | (\$72,692)   |
| Net Benefits                          | \$171,632    | \$225,974    | \$254,497    | \$268,498    | \$276,553    | \$282,314    |
| <b>Tons avoided through recycling</b> | <b>2,396</b> | <b>2,852</b> | <b>3,091</b> | <b>3,209</b> | <b>3,276</b> | <b>3,325</b> |
| PV per ton                            |              |              |              |              |              |              |

**44 Phone & Junk Opt Out**

| Year                                  | 2016         | 2017         | 2018         | 2019         | 2020         | 2021         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$383,543    | \$421,062    | \$433,660    | \$437,043    | \$437,461    | \$440,720    |
| Program Cost                          | \$83,266     | \$83,266     | \$83,266     | \$83,266     | \$83,266     | \$83,266     |
| Net Benefits                          | \$300,277    | \$337,796    | \$350,394    | \$253,777    | \$354,195    | \$357,454    |
| <b>Tons avoided through recycling</b> | <b>2,770</b> | <b>3,041</b> | <b>3,132</b> | <b>3,157</b> | <b>3,160</b> | <b>3,183</b> |
| PV per ton                            |              |              |              |              |              |              |

**45 Ban Clean Wood**

| Year                                  | 2016          | 2017          | 2018         | 2019         | 2020         | 2021         |
|---------------------------------------|---------------|---------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$666,444     | \$780,351     | \$420,299    | \$433,179    | \$441,113    | \$447,169    |
| Program Cost                          | \$409,264     | \$476,651     | \$253,646    | \$261,266    | \$265,960    | \$269,543    |
| Net Benefits                          | \$257,180     | \$303,700     | \$166,652    | \$171,913    | \$175,153    | \$177,627    |
| <b>Tons avoided through recycling</b> | <b>10,570</b> | <b>12,377</b> | <b>6,666</b> | <b>6,870</b> | <b>6,996</b> | <b>7,092</b> |
| PV per ton                            |               |               |              |              |              |              |

**46 Com C&D Ban**

| Year                                  | 2016     | 2017       | 2018         | 2019         | 2020          | 2021          |
|---------------------------------------|----------|------------|--------------|--------------|---------------|---------------|
| Program Benefits                      | \$0      | \$0        | \$248,128    | \$462,739    | \$677,892     | \$822,218     |
| Program Cost                          | \$0      | \$70,000   | \$410,156    | \$660,443    | \$911,374     | \$1,083,055   |
| Net Benefits                          | \$0      | (\$70,000) | (\$162,028)  | (\$197,704)  | (\$233,482)   | (\$260,837)   |
| <b>Tons avoided through recycling</b> | <b>-</b> | <b>-</b>   | <b>3,935</b> | <b>7,339</b> | <b>10,752</b> | <b>13,041</b> |
| PV per ton                            |          |            |              |              |               |               |

**50 Plast Film Ban**

| Year                                  | 2016         | 2017         | 2018      | 2019      | 2020      | 2021      |
|---------------------------------------|--------------|--------------|-----------|-----------|-----------|-----------|
| Program Benefits                      | \$66,374     | \$70,280     | \$5,959   | \$6,097   | \$6,193   | \$6,272   |
| Program Cost                          | \$5,000      | \$0          | \$0       | \$0       | \$0       | \$0       |
| Net Benefits                          | \$61,374     | \$70,280     | \$5,959   | \$6,097   | \$6,193   | \$6,272   |
| <b>Tons avoided through recycling</b> | <b>1,053</b> | <b>1,115</b> | <b>95</b> | <b>97</b> | <b>98</b> | <b>99</b> |
| PV per ton                            |              |              |           |           |           |           |

**51 Pre Scale Recycle**

| Year                                  | 2016       | 2017         | 2018         | 2019         | 2020         | 2021         |
|---------------------------------------|------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$39,674   | \$58,713     | \$71,852     | \$78,707     | \$82,098     | \$83,984     |
| Program Cost                          | \$125,490  | \$104,129    | \$259,390    | \$251,699    | \$247,894    | \$245,778    |
| Net Benefits                          | (\$85,816) | (\$45,416)   | (\$187,538)  | (\$172,992)  | (\$165,796)  | (\$161,794)  |
| <b>Tons avoided through recycling</b> | <b>786</b> | <b>1,164</b> | <b>1,424</b> | <b>1,560</b> | <b>1,627</b> | <b>1,665</b> |
| PV per ton                            |            |              |              |              |              |              |

**52 Divert Reuseables**

| Year                                  | 2016      | 2017      | 2018      | 2019      | 2020      | 2021       |
|---------------------------------------|-----------|-----------|-----------|-----------|-----------|------------|
| Program Benefits                      | \$2,445   | \$3,598   | \$4,391   | \$4,805   | \$5,010   | \$5,124    |
| Program Cost                          | \$1,000   | \$1,000   | \$1,000   | \$1,000   | \$1,000   | \$1,000    |
| Net Benefits                          | \$1,445   | \$2,598   | \$3,391   | \$3,805   | \$4,010   | \$4,124    |
| <b>Tons avoided through recycling</b> | <b>48</b> | <b>71</b> | <b>87</b> | <b>95</b> | <b>99</b> | <b>102</b> |
| PV per ton                            |           |           |           |           |           |            |

**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

**41 Restore Education**

| Year                                  | 2022         | 2023         | 2024         | 2025         | 2026         | 2027         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$537,510    | \$543,123    | \$548,669    | \$554,264    | \$559,881    | \$565,474    |
| Program Cost                          | \$496,602    | \$495,423    | \$494,278    | \$493,142    | \$492,010    | \$490,894    |
| Net Benefits                          | \$40,907     | \$47,700     | \$54,391     | \$61,122     | \$67,871     | \$74,580     |
| <b>Tons avoided through recycling</b> | <b>3,882</b> | <b>3,923</b> | <b>3,963</b> | <b>4,003</b> | <b>4,044</b> | <b>4,084</b> |
| PV per ton                            |              |              |              |              |              |              |

**42 Latex Paint Prod Stew**

| Year                                  | 2022       | 2023       | 2024       | 2025       | 2026       | 2027       |
|---------------------------------------|------------|------------|------------|------------|------------|------------|
| Program Benefits                      | \$112,473  | \$113,822  | \$115,114  | \$116,429  | \$117,755  | \$119,112  |
| Program Cost                          | \$0        | \$0        | \$0        | \$0        | \$0        | \$0        |
| Net Benefits                          | \$112,473  | \$113,822  | \$115,114  | \$116,429  | \$117,755  | \$119,112  |
| <b>Tons avoided through recycling</b> | <b>812</b> | <b>822</b> | <b>831</b> | <b>841</b> | <b>851</b> | <b>860</b> |
| PV per ton                            |            |            |            |            |            |            |

**43 New Education - Com**

| Year                                  | 2022         | 2023         | 2024         | 2025         | 2026         | 2027         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$212,366    | \$214,951    | \$217,476    | \$219,993    | \$222,495    | \$224,977    |
| Program Cost                          | (\$75,147)   | (\$77,463)   | (\$79,726)   | (\$81,983)   | (\$84,226)   | (\$86,451)   |
| Net Benefits                          | \$287,514    | \$292,414    | \$297,203    | \$301,975    | \$306,721    | \$311,428    |
| <b>Tons avoided through recycling</b> | <b>3,368</b> | <b>3,409</b> | <b>3,449</b> | <b>3,489</b> | <b>3,529</b> | <b>3,568</b> |
| PV per ton                            |              |              |              |              |              |              |

**44 Phone & Junk Opt Out**

| Year                                  | 2022         | 2023         | 2024         | 2025         | 2026         | 2027         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$443,498    | \$446,339    | \$449,199    | \$452,125    | \$454,996    | \$457,863    |
| Program Cost                          | \$83,266     | \$183,266    | \$83,266     | \$83,266     | \$83,266     | \$183,266    |
| Net Benefits                          | \$360,232    | \$263,073    | \$365,933    | \$368,859    | \$371,730    | \$274,597    |
| <b>Tons avoided through recycling</b> | <b>3,203</b> | <b>3,224</b> | <b>3,244</b> | <b>3,266</b> | <b>3,286</b> | <b>3,307</b> |
| PV per ton                            |              |              |              |              |              |              |

**45 Ban Clean Wood**

| Year                                  | 2022         | 2023         | 2024         | 2025         | 2026         | 2027         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$452,863    | \$458,321    | \$463,691    | \$469,056    | \$474,397    | \$479,696    |
| Program Cost                          | \$272,911    | \$276,140    | \$279,317    | \$282,491    | \$285,650    | \$288,785    |
| Net Benefits                          | \$179,952    | \$182,181    | \$184,374    | \$186,565    | \$188,747    | \$190,911    |
| <b>Tons avoided through recycling</b> | <b>7,183</b> | <b>7,269</b> | <b>7,354</b> | <b>7,439</b> | <b>7,524</b> | <b>7,608</b> |
| PV per ton                            |              |              |              |              |              |              |

**46 Com C&D Ban**

| Year                                  | 2022          | 2023          | 2024          | 2025          | 2026          | 2027          |
|---------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Program Benefits                      | \$894,866     | \$928,529     | \$945,742     | \$956,882     | \$965,894     | \$974,009     |
| Program Cost                          | \$1,169,471   | \$1,209,516   | \$1,229,991   | \$1,243,242   | \$1,253,962   | \$1,263,615   |
| Net Benefits                          | (\$274,606)   | (\$280,986)   | (\$284,249)   | (\$286,360)   | (\$288,068)   | (\$289,606)   |
| <b>Tons avoided through recycling</b> | <b>14,193</b> | <b>14,727</b> | <b>15,000</b> | <b>15,177</b> | <b>15,319</b> | <b>15,448</b> |
| PV per ton                            |               |               |               |               |               |               |

**50 Plast Film Ban**

| Year                                  | 2022       | 2023       | 2024       | 2025       | 2026       | 2027       |
|---------------------------------------|------------|------------|------------|------------|------------|------------|
| Program Benefits                      | \$6,349    | \$6,425    | \$6,500    | \$6,575    | \$6,650    | \$6,724    |
| Program Cost                          | \$0        | \$0        | \$0        | \$0        | \$0        | \$0        |
| Net Benefits                          | \$6,349    | \$6,425    | \$6,500    | \$6,575    | \$6,650    | \$6,724    |
| <b>Tons avoided through recycling</b> | <b>101</b> | <b>102</b> | <b>103</b> | <b>104</b> | <b>105</b> | <b>107</b> |
| PV per ton                            |            |            |            |            |            |            |

**51 Pre Scale Recycle**

| Year                                  | 2022         | 2023         | 2024         | 2025         | 2026         | 2027         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$85,341     | \$86,477     | \$87,530     | \$88,558     | \$89,572     | \$90,574     |
| Program Cost                          | \$244,256    | \$242,981    | \$241,800    | \$240,647    | \$239,509    | \$238,384    |
| Net Benefits                          | (\$158,915)  | (\$156,504)  | (\$154,269)  | (\$152,089)  | (\$149,937)  | (\$147,810)  |
| <b>Tons avoided through recycling</b> | <b>1,692</b> | <b>1,714</b> | <b>1,735</b> | <b>1,755</b> | <b>1,775</b> | <b>1,795</b> |
| PV per ton                            |              |              |              |              |              |              |

**52 Divert Reuseables**

| Year                                  | 2022       | 2023       | 2024       | 2025       | 2026       | 2027       |
|---------------------------------------|------------|------------|------------|------------|------------|------------|
| Program Benefits                      | \$5,207    | \$5,276    | \$5,340    | \$5,403    | \$5,465    | \$5,526    |
| Program Cost                          | \$1,000    | \$1,000    | \$1,000    | \$1,000    | \$1,000    | \$1,000    |
| Net Benefits                          | \$4,207    | \$4,276    | \$4,340    | \$4,403    | \$4,465    | \$4,526    |
| <b>Tons avoided through recycling</b> | <b>103</b> | <b>105</b> | <b>106</b> | <b>107</b> | <b>108</b> | <b>110</b> |
| PV per ton                            |            |            |            |            |            |            |

**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

**41 Restore Education**

| Year                                  | 2028         | 2029         | 2030         |
|---------------------------------------|--------------|--------------|--------------|
| Program Benefits                      | \$570,995    | \$576,523    | \$582,242    |
| Program Cost                          | \$489,830    | \$488,799    | \$487,736    |
| Net Benefits                          | \$81,164     | \$87,725     | \$94,506     |
| <b>Tons avoided through recycling</b> | <b>4,124</b> | <b>4,164</b> | <b>4,205</b> |
| PV per ton                            |              |              |              |

**42 Latex Paint Prod Stew**

| Year                                  | 2028       | 2029       | 2030       |
|---------------------------------------|------------|------------|------------|
| Program Benefits                      | \$120,486  | \$121,927  | \$123,441  |
| Program Cost                          | \$0        | \$0        | \$0        |
| Net Benefits                          | \$120,486  | \$121,927  | \$123,441  |
| <b>Tons avoided through recycling</b> | <b>870</b> | <b>881</b> | <b>892</b> |
| PV per ton                            |            |            |            |

**43 New Education - Com**

| Year                                  | 2028         | 2029         | 2030         |
|---------------------------------------|--------------|--------------|--------------|
| Program Benefits                      | \$227,377    | \$229,730    | \$232,171    |
| Program Cost                          | (\$88,603)   | (\$90,711)   | (\$92,900)   |
| Net Benefits                          | \$315,980    | \$320,441    | \$325,071    |
| <b>Tons avoided through recycling</b> | <b>3,606</b> | <b>3,644</b> | <b>3,682</b> |
| PV per ton                            |              |              |              |

**44 Phone & Junk Opt Out**

| Year                                  | 2028         | 2029         | 2030         |
|---------------------------------------|--------------|--------------|--------------|
| Program Benefits                      | \$460,871    | \$463,995    | \$467,383    |
| Program Cost                          | \$83,266     | \$83,266     | \$83,266     |
| Net Benefits                          | \$377,605    | \$380,729    | \$384,117    |
| <b>Tons avoided through recycling</b> | <b>3,329</b> | <b>3,351</b> | <b>3,376</b> |
| PV per ton                            |              |              |              |

**45 Ban Clean Wood**

| Year                                  | 2028         | 2029         | 2030         |
|---------------------------------------|--------------|--------------|--------------|
| Program Benefits                      | \$484,819    | \$489,842    | \$495,055    |
| Program Cost                          | \$291,816    | \$294,788    | \$297,871    |
| Net Benefits                          | \$193,003    | \$195,054    | \$197,183    |
| <b>Tons avoided through recycling</b> | <b>7,689</b> | <b>7,769</b> | <b>7,852</b> |
| PV per ton                            |              |              |              |

**46 Com C&D Ban**

| Year                                  | 2028          | 2029          | 2030          |
|---------------------------------------|---------------|---------------|---------------|
| Program Benefits                      | \$981,573     | \$989,344     | \$997,392     |
| Program Cost                          | \$1,272,612   | \$1,281,857   | \$1,291,429   |
| Net Benefits                          | (\$291,040)   | (\$292,512)   | (\$294,038)   |
| <b>Tons avoided through recycling</b> | <b>15,568</b> | <b>15,691</b> | <b>15,819</b> |
| PV per ton                            |               |               |               |

**50 Plast Film Ban**

| Year                                  | 2028       | 2029       | 2030       |
|---------------------------------------|------------|------------|------------|
| Program Benefits                      | \$6,796    | \$6,866    | \$6,939    |
| Program Cost                          | \$0        | \$0        | \$0        |
| Net Benefits                          | \$6,796    | \$6,866    | \$6,939    |
| <b>Tons avoided through recycling</b> | <b>108</b> | <b>109</b> | <b>110</b> |
| PV per ton                            |            |            |            |

**51 Pre Scale Recycle**

| Year                                  | 2028         | 2029         | 2030         |
|---------------------------------------|--------------|--------------|--------------|
| Program Benefits                      | \$91,543     | \$92,491     | \$93,476     |
| Program Cost                          | \$237,298    | \$236,234    | \$235,129    |
| Net Benefits                          | (\$145,755)  | (\$143,743)  | (\$141,654)  |
| <b>Tons avoided through recycling</b> | <b>1,815</b> | <b>1,833</b> | <b>1,853</b> |
| PV per ton                            |              |              |              |

**52 Divert Reuseables**

| Year                                  | 2028       | 2029       | 2030       |
|---------------------------------------|------------|------------|------------|
| Program Benefits                      | \$5,585    | \$5,643    | \$5,703    |
| Program Cost                          | \$1,000    | \$1,000    | \$1,000    |
| Net Benefits                          | \$4,585    | \$4,643    | \$4,703    |
| <b>Tons avoided through recycling</b> | <b>111</b> | <b>112</b> | <b>113</b> |
| PV per ton                            |            |            |            |

**Construction and Demolition Debris - Program Tons Per Year  
Scenario 78, Recommended**

|                         |              |                |              |                | Order ->        | 7            | 6                            | 1           | 4            | 5                    | 2                      | 8       | 10                   | 12                   | 13 |
|-------------------------|--------------|----------------|--------------|----------------|-----------------|--------------|------------------------------|-------------|--------------|----------------------|------------------------|---------|----------------------|----------------------|----|
| Year                    | Recycle Rate | Total Material | Total Dipped | Total Diverted | Beneficial Uses | C&D Priv Rec | Deconstruction Single Family | Built Green | LEED Program | Voluntary Assessment | Facility Certification | ABC BAN | Bans beyond ABC 2013 | Bans beyond ABC 2014 |    |
| <b>ALL MATERIALS</b>    |              |                |              |                | 90              | 99           | 80                           | 82          | 83           | 81                   | 94                     | 92      | 78                   | 77                   |    |
| 2007                    | 49.3%        | 415,801        | 201,156      | 214,645        | 9,738           | 204,907      | -                            | -           | -            | -                    | -                      | -       | -                    | -                    |    |
| 2008                    | 50.6%        | 397,052        | 181,241      | 215,811        | 14,961          | 200,851      | -                            | -           | -            | -                    | -                      | -       | -                    | -                    |    |
| 2009                    | 56.4%        | 288,551        | 115,446      | 173,105        | 10,362          | 162,742      | -                            | -           | -            | -                    | -                      | -       | -                    | -                    |    |
| 2010                    | 57.2%        | 313,461        | 123,165      | 190,295        | 10,971          | 171,595      | 4                            | 317         | 7,409        | -                    | -                      | -       | -                    | -                    |    |
| 2011                    | 57.6%        | 327,334        | 127,449      | 199,885        | 11,306          | 176,445      | 10                           | 833         | 11,291       | -                    | -                      | -       | -                    | -                    |    |
| 2012                    | 58.1%        | 351,228        | 134,996      | 216,232        | 11,998          | 186,873      | 30                           | 2,017       | 14,539       | 59                   | 257                    | 459     | -                    | -                    |    |
| 2013                    | 58.7%        | 371,060        | 140,583      | 230,477        | 12,558          | 195,293      | 86                           | 3,960       | 16,509       | 168                  | 694                    | 884     | 325                  | -                    |    |
| 2014                    | 60.2%        | 375,819        | 137,147      | 238,672        | 12,612          | 196,063      | 231                          | 5,860       | 17,121       | 448                  | 1,666                  | 1,276   | 761                  | 2,635                |    |
| 2015                    | 61.9%        | 370,548        | 129,038      | 241,510        | 12,319          | 192,068      | 572                          | 6,947       | 16,974       | 1,109                | 3,384                  | 1,467   | 1,473                | 5,198                |    |
| 2016                    | 64.1%        | 368,871        | 120,413      | 248,458        | 12,082          | 190,141      | 1,284                        | 7,447       | 16,864       | 2,489                | 5,669                  | 1,525   | 2,309                | 8,648                |    |
| 2017                    | 66.4%        | 348,631        | 106,101      | 242,530        | 11,106          | 178,735      | 2,256                        | 7,207       | 15,844       | 4,365                | 7,277                  | 1,435   | 2,782                | 11,522               |    |
| 2018                    | 68.2%        | 339,571        | 97,680       | 241,891        | 10,270          | 173,603      | 3,213                        | 7,053       | 15,333       | 6,205                | 8,186                  | 1,351   | 2,992                | 13,683               |    |
| 2019                    | 69.4%        | 337,796        | 93,952       | 243,844        | 9,275           | 173,270      | 3,851                        | 7,016       | 15,188       | 7,428                | 8,604                  | 1,248   | 3,058                | 14,905               |    |
| 2020                    | 70.3%        | 338,772        | 92,653       | 246,120        | 7,965           | 175,395      | 4,177                        | 7,032       | 15,200       | 8,052                | 8,760                  | 1,105   | 3,055                | 15,378               |    |
| 2021                    | 70.9%        | 355,170        | 96,353       | 258,818        | 7,015           | 185,791      | 4,515                        | 7,370       | 15,923       | 8,701                | 9,187                  | 1,005   | 3,160                | 16,150               |    |
| 2022                    | 71.2%        | 362,478        | 97,964       | 264,514        | 6,305           | 190,912      | 4,661                        | 7,521       | 16,245       | 8,981                | 9,352                  | 925     | 3,193                | 16,419               |    |
| 2023                    | 71.4%        | 357,540        | 96,475       | 261,065        | 5,822           | 188,931      | 4,617                        | 7,418       | 16,022       | 8,896                | 9,210                  | 865     | 3,134                | 16,151               |    |
| 2024                    | 71.5%        | 353,337        | 95,281       | 258,056        | 5,594           | 186,962      | 4,570                        | 7,331       | 15,833       | 8,806                | 9,095                  | 835     | 3,090                | 15,942               |    |
| 2025                    | 71.5%        | 343,254        | 92,540       | 250,714        | 5,375           | 181,720      | 4,442                        | 7,122       | 15,381       | 8,559                | 8,833                  | 804     | 2,999                | 15,479               |    |
| 2026                    | 71.5%        | 337,940        | 91,099       | 246,841        | 5,270           | 178,942      | 4,374                        | 7,012       | 15,142       | 8,428                | 8,695                  | 789     | 2,952                | 15,237               |    |
| 2027                    | 71.5%        | 340,503        | 91,787       | 248,716        | 5,301           | 180,312      | 4,407                        | 7,065       | 15,257       | 8,493                | 8,761                  | 794     | 2,974                | 15,351               |    |
| 2028                    | 71.5%        | 343,496        | 92,593       | 250,903        | 5,345           | 181,902      | 4,446                        | 7,127       | 15,391       | 8,568                | 8,838                  | 801     | 3,000                | 15,486               |    |
| 2029                    | 71.5%        | 345,141        | 93,036       | 252,105        | 5,369           | 182,775      | 4,468                        | 7,161       | 15,465       | 8,609                | 8,880                  | 804     | 3,014                | 15,560               |    |
| 2030                    | 71.5%        | 349,601        | 94,238       | 255,363        | 5,438           | 185,137      | 4,525                        | 7,253       | 15,665       | 8,720                | 8,995                  | 815     | 3,053                | 15,761               |    |
| <b>WITHOUT CONCRETE</b> |              |                |              |                |                 |              |                              |             |              |                      |                        |         |                      |                      |    |
| 2007                    | 16.0%        | 231,093        | 184,455      | 46,638         | 9,738           | 36,900       | -                            | -           | -            | -                    | -                      | -       | -                    | -                    |    |
| 2008                    | 12.1%        | 207,802        | 167,760      | 40,043         | 14,961          | 25,082       | -                            | -           | -            | -                    | -                      | -       | -                    | -                    |    |
| 2009                    | 23.1%        | 151,017        | 105,816      | 45,201         | 10,362          | 34,838       | -                            | -           | -            | -                    | -                      | -       | -                    | -                    |    |
| 2010                    | 24.4%        | 164,054        | 113,032      | 51,022         | 10,971          | 36,996       | 2                            | 106         | 2,947        | -                    | -                      | -       | -                    | -                    |    |
| 2011                    | 25.1%        | 171,315        | 117,041      | 54,274         | 11,306          | 38,191       | 4                            | 279         | 4,494        | -                    | -                      | -       | -                    | -                    |    |
| 2012                    | 25.7%        | 183,820        | 124,496      | 59,324         | 11,998          | 40,583       | 13                           | 675         | 5,792        | 59                   | 204                    | -       | -                    | -                    |    |
| 2013                    | 26.5%        | 194,199        | 130,111      | 64,088         | 12,558          | 42,536       | 37                           | 1,325       | 6,586        | 168                  | 554                    | -       | 325                  | -                    |    |
| 2014                    | 28.8%        | 196,690        | 127,423      | 69,267         | 12,612          | 42,778       | 98                           | 1,960       | 6,837        | 448                  | 1,349                  | -       | 761                  | 2,425                |    |
| 2015                    | 31.6%        | 193,931        | 120,299      | 73,632         | 12,319          | 41,878       | 242                          | 2,319       | 6,776        | 1,109                | 2,808                  | -       | 1,473                | 4,708                |    |
| 2016                    | 35.4%        | 193,054        | 112,706      | 80,347         | 12,082          | 41,294       | 543                          | 2,476       | 6,716        | 2,489                | 4,840                  | -       | 2,309                | 7,599                |    |
| 2017                    | 39.2%        | 182,461        | 99,920       | 82,540         | 11,106          | 38,570       | 954                          | 2,382       | 6,282        | 4,365                | 6,349                  | -       | 2,782                | 9,751                |    |
| 2018                    | 42.1%        | 177,719        | 92,698       | 85,020         | 10,270          | 37,306       | 1,358                        | 2,316       | 6,051        | 6,205                | 7,244                  | -       | 2,992                | 11,277               |    |
| 2019                    | 43.9%        | 176,790        | 89,827       | 86,963         | 9,275           | 37,353       | 1,628                        | 2,295       | 5,975        | 7,428                | 7,708                  | -       | 3,058                | 12,242               |    |
| 2020                    | 45.2%        | 177,301        | 89,200       | 88,101         | 7,965           | 38,206       | 1,766                        | 2,296       | 5,971        | 8,052                | 7,958                  | -       | 3,055                | 12,833               |    |
| 2021                    | 46.0%        | 185,883        | 93,284       | 92,599         | 7,015           | 40,940       | 1,908                        | 2,404       | 6,251        | 8,701                | 8,454                  | -       | 3,160                | 13,764               |    |
| 2022                    | 46.5%        | 189,708        | 95,167       | 94,540         | 6,305           | 42,387       | 1,970                        | 2,452       | 6,376        | 8,981                | 8,677                  | -       | 3,193                | 14,199               |    |
| 2023                    | 46.7%        | 187,123        | 93,870       | 93,254         | 5,822           | 42,098       | 1,952                        | 2,419       | 6,288        | 8,896                | 8,578                  | -       | 3,134                | 14,068               |    |
| 2024                    | 46.8%        | 184,924        | 92,768       | 92,156         | 5,594           | 41,720       | 1,932                        | 2,390       | 6,214        | 8,806                | 8,485                  | -       | 3,090                | 13,926               |    |
| 2025                    | 46.8%        | 179,646        | 90,121       | 89,525         | 5,375           | 40,573       | 1,878                        | 2,322       | 6,036        | 8,559                | 8,245                  | -       | 2,999                | 13,538               |    |
| 2026                    | 46.9%        | 176,865        | 88,726       | 88,139         | 5,270           | 39,962       | 1,849                        | 2,286       | 5,943        | 8,428                | 8,119                  | -       | 2,952                | 13,331               |    |
| 2027                    | 46.9%        | 178,207        | 89,399       | 88,807         | 5,301           | 40,271       | 1,863                        | 2,303       | 5,988        | 8,493                | 8,181                  | -       | 2,974                | 13,434               |    |
| 2028                    | 46.9%        | 179,773        | 90,185       | 89,588         | 5,345           | 40,627       | 1,880                        | 2,323       | 6,041        | 8,568                | 8,253                  | -       | 3,000                | 13,552               |    |
| 2029                    | 46.9%        | 180,634        | 90,617       | 90,017         | 5,369           | 40,822       | 1,889                        | 2,335       | 6,069        | 8,609                | 8,292                  | -       | 3,014                | 13,617               |    |
| 2030                    | 46.9%        | 182,968        | 91,788       | 91,180         | 5,438           | 41,350       | 1,913                        | 2,365       | 6,148        | 8,720                | 8,399                  | -       | 3,053                | 13,793               |    |

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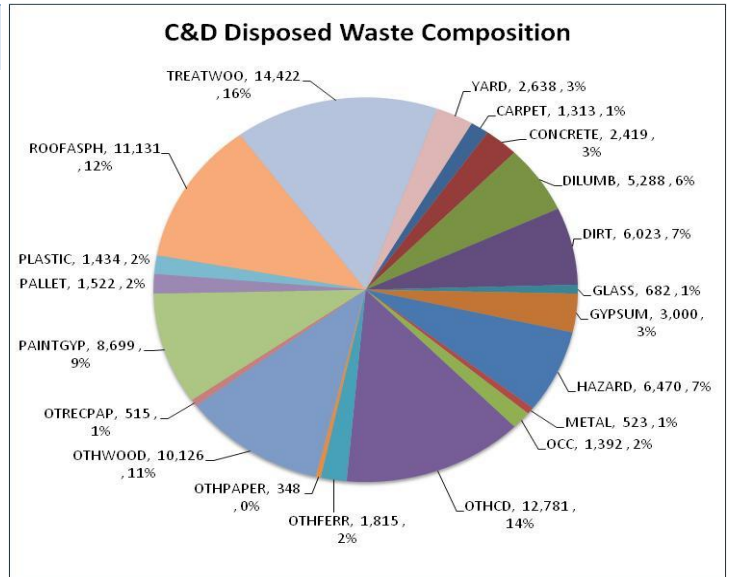
## Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs

### Summary - Construction and Demolition Program Tons Per Year Scenario 78, Recommended Year 2025

(in tons per year)

| All Material C&D                           |                    | Total Disposed | Total Generated | Total Beneficial Uses | Total Recycled | Percent Recycled | C&D Priv Rec   | Facility Certification | Beneficial Uses | ABC BAN    | Deconstruction Single Family | Voluntary Assessment | Built Green  | LEED Program  | Bans beyond ABC 2013 | Bans beyond ABC 2014 | Total          |
|--------------------------------------------|--------------------|----------------|-----------------|-----------------------|----------------|------------------|----------------|------------------------|-----------------|------------|------------------------------|----------------------|--------------|---------------|----------------------|----------------------|----------------|
|                                            |                    | a              | d = a + b + c   | b                     | c              | c/d              | 99             | 94                     | 90              | 92         | 80                           | 81                   | 82           | 83            | 78                   | 77                   |                |
| Carpet                                     | CARPET             | 1,313          | 1,946           | -                     | 633            | 32.5%            | 103            | 134                    | -               | -          | 28                           | -                    | 21           | 118           | 229                  | -                    | 633            |
| Rock/ Concrete/ Brick/ Ceramic & Porcelain | CONCRETE           | 2,419          | 163,607         | -                     | 161,189        | 98.5%            | 141,147        | 588                    | -               | 804        | 2,564                        | -                    | 4,800        | 9,344         | -                    | 1,942                | 161,189        |
| Dimension lumber                           | DILUMB             | 5,288          | 21,402          | 1,587                 | 14,528         | 67.9%            | 6,775          | 1,109                  | 1,587           | -          | 320                          | 861                  | 506          | 1,077         | -                    | 3,879                | 16,115         |
| Sand/Soil/Dirt                             | DIRT               | 6,023          | 7,510           | -                     | 1,487          | 19.8%            | -              | 763                    | -               | -          | 107                          | -                    | 95           | 523           | -                    | -                    | 1,487          |
| Glass                                      | GLASS              | 682            | 682             | -                     | -              | 0.0%             | -              | -                      | -               | -          | -                            | -                    | -            | -             | -                    | -                    | -              |
| Clean Gypsum Board                         | GYPSUM             | 3,000          | 10,807          | -                     | 7,807          | 72.2%            | 5,389          | 449                    | -               | -          | 104                          | -                    | 222          | 376           | 1,267                | -                    | 7,807          |
| Hazardous & Other                          | HAZARD             | 6,470          | 6,512           | -                     | 42             | 0.6%             | -              | -                      | -               | -          | -                            | 42                   | -            | -             | -                    | -                    | 42             |
| Metal                                      | METAL              | 523            | 7,345           | -                     | 6,822          | 92.9%            | 4,036          | 110                    | -               | -          | 110                          | 1,754                | 137          | 292           | 384                  | -                    | 6,822          |
| Corrugated Kraft (OCC)                     | OCC                | 1,392          | 1,392           | -                     | -              | 0.0%             | -              | -                      | -               | -          | -                            | -                    | -            | -             | -                    | -                    | -              |
| Other C&D                                  | OTHCD              | 12,781         | 26,563          | 877                   | 12,905         | 48.6%            | 10,759         | 1,119                  | 877             | -          | 220                          | -                    | 109          | 699           | -                    | -                    | 13,781         |
| Other ferrous                              | OTHFERR            | 1,815          | 3,835           | -                     | 2,020          | 52.7%            | 159            | 333                    | -               | -          | 55                           | 221                  | 74           | 174           | 1,005                | -                    | 2,020          |
| Other Paper                                | OTHPAPER           | 348            | 419             | -                     | 71             | 16.9%            | -              | 42                     | -               | -          | 4                            | -                    | 6            | 20            | -                    | -                    | 71             |
| Other recyclable wood                      | OTHWOOD            | 10,126         | 32,813          | 2,458                 | 20,229         | 61.6%            | 10,495         | 1,514                  | 2,458           | -          | 468                          | 1,321                | 643          | 1,511         | -                    | 4,277                | 22,687         |
| Other Recyclable Paper                     | OTRECPAP           | 515            | 601             | -                     | 86             | 14.3%            | -              | 71                     | -               | -          | 8                            | -                    | 8            | -             | -                    | -                    | 86             |
| Painted/Demolition Gypsum                  | PAINTGYP           | 8,699          | 9,382           | -                     | 683            | 7.3%             | -              | 439                    | -               | -          | 79                           | -                    | 19           | 146           | -                    | -                    | 683            |
| Pallets & crates                           | PALLET             | 1,522          | 5,854           | 453                   | 3,880          | 66.3%            | 1,932          | 293                    | 453             | -          | 88                           | -                    | 144          | 307           | -                    | 1,116                | 4,333          |
| Plastic                                    | PLASTIC            | 1,434          | 1,993           | -                     | 558            | 28.0%            | -              | 143                    | -               | -          | 22                           | 180                  | 19           | 79            | 115                  | -                    | 558            |
| Roofing (asphalt & comp)                   | ROOFASPH           | 11,131         | 19,334          | -                     | 8,203          | 42.4%            | 926            | 1,728                  | -               | -          | 249                          | -                    | 320          | 714           | -                    | 4,266                | 8,203          |
| Treated and contaminated wood              | TREATWOC           | 14,422         | 18,618          | -                     | 4,196          | 22.5%            | -              | -                      | -               | -          | 16                           | 4,180                | -            | -             | -                    | -                    | 4,196          |
| Yard waste & other organics                | YARD               | 2,638          | 2,638           | -                     | -              | 0.0%             | -              | -                      | -               | -          | -                            | -                    | -            | -             | -                    | -                    | -              |
| <b>Total</b>                               | <b>Grand Total</b> | <b>92,540</b>  | <b>343,254</b>  | <b>5,375</b>          | <b>245,339</b> | <b>71.5%</b>     | <b>181,720</b> | <b>8,833</b>           | <b>5,375</b>    | <b>804</b> | <b>4,442</b>                 | <b>8,559</b>         | <b>7,122</b> | <b>15,381</b> | <b>2,999</b>         | <b>15,479</b>        | <b>250,714</b> |

| Year | Total Disposed | Total Generated | Total Beneficial Uses | Total Recycled | Percent Recycled |
|------|----------------|-----------------|-----------------------|----------------|------------------|
| 2007 | 201,156        | 415,801         | 9,738                 | 204,907        | 49.3%            |
| 2008 | 181,241        | 397,052         | 14,961                | 200,851        | 50.6%            |
| 2009 | 115,446        | 288,551         | 10,362                | 162,742        | 56.4%            |
| 2010 | 123,165        | 313,461         | 10,971                | 179,325        | 57.2%            |
| 2011 | 127,449        | 327,334         | 11,306                | 188,579        | 57.6%            |
| 2012 | 134,996        | 351,228         | 11,998                | 204,235        | 58.1%            |
| 2013 | 140,583        | 371,060         | 12,558                | 217,919        | 58.7%            |
| 2014 | 137,147        | 375,819         | 12,612                | 226,060        | 60.2%            |
| 2015 | 129,038        | 370,548         | 12,319                | 229,191        | 61.9%            |
| 2016 | 120,413        | 368,871         | 12,082                | 236,376        | 64.1%            |
| 2017 | 106,101        | 348,631         | 11,106                | 231,424        | 66.4%            |
| 2018 | 97,680         | 339,571         | 10,270                | 231,621        | 68.2%            |
| 2019 | 93,952         | 337,796         | 9,275                 | 234,569        | 69.4%            |
| 2020 | 92,653         | 338,772         | 7,965                 | 238,155        | 70.3%            |
| 2021 | 96,353         | 355,170         | 7,015                 | 251,803        | 70.9%            |
| 2022 | 97,964         | 362,478         | 6,305                 | 258,209        | 71.2%            |
| 2023 | 96,475         | 357,540         | 5,822                 | 255,243        | 71.4%            |
| 2024 | 95,281         | 353,337         | 5,594                 | 252,463        | 71.5%            |
| 2025 | 92,540         | 343,254         | 5,375                 | 245,339        | 71.5%            |
| 2026 | 91,099         | 337,940         | 5,270                 | 241,571        | 71.5%            |
| 2027 | 91,787         | 340,503         | 5,301                 | 243,415        | 71.5%            |
| 2028 | 92,593         | 343,496         | 5,345                 | 245,558        | 71.5%            |
| 2029 | 93,036         | 345,141         | 5,369                 | 246,736        | 71.5%            |
| 2030 | 94,238         | 349,601         | 5,438                 | 249,925        | 71.5%            |



**Summary of Recycling Program Benefits and Costs  
Construction and Demolition Scenario 78, Recommended**

**Total**

| Year                                  | Present Value  | 2010       | 2011       | 2012       | 2013         | 2014         |
|---------------------------------------|----------------|------------|------------|------------|--------------|--------------|
| Program Benefits                      | \$42,963,512   | \$429      | \$1,215    | \$93,480   | \$250,213    | \$813,888    |
| Program Cost                          | \$2,236,516    | \$20,000   | \$65,000   | \$100,000  | \$125,000    | \$165,000    |
| Net Benefits                          | \$40,726,996   | (\$19,571) | (\$63,785) | (\$6,520)  | \$125,213    | \$648,888    |
| <b>Tons avoided through recycling</b> | <b>608,188</b> | <b>4</b>   | <b>10</b>  | <b>806</b> | <b>2,157</b> | <b>7,016</b> |

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All costs in 2010 dollars

**New Programs**

(existing programs 90 and 99 not included)

**77 Bans beyond ABC 2014**

| Year                                  | Present Value  | 2010     | 2011     | 2012     | 2013       | 2014         |
|---------------------------------------|----------------|----------|----------|----------|------------|--------------|
| Program Benefits                      | \$16,205,753   | \$0      | \$0      | \$0      | \$0        | \$305,675    |
| Program Cost                          | \$586,650      | \$0      | \$0      | \$0      | \$35,000   | \$20,000     |
| Net Benefits                          | \$15,619,104   | \$0      | \$0      | \$0      | (\$35,000) | \$285,675    |
| <b>Tons avoided through recycling</b> | <b>229,505</b> | <b>-</b> | <b>-</b> | <b>-</b> | <b>-</b>   | <b>2,635</b> |

PV per ton \$68

**78 Bans beyond ABC 2013**

| Year                                  | Present Value | 2010     | 2011     | 2012       | 2013       | 2014       |
|---------------------------------------|---------------|----------|----------|------------|------------|------------|
| Program Benefits                      | \$3,386,016   | \$0      | \$0      | \$0        | \$37,670   | \$88,224   |
| Program Cost                          | \$636,225     | \$0      | \$0      | \$35,000   | \$20,000   | \$55,000   |
| Net Benefits                          | \$2,749,791   | \$0      | \$0      | (\$35,000) | \$17,670   | \$33,224   |
| <b>Tons avoided through recycling</b> | <b>47,325</b> | <b>-</b> | <b>-</b> | <b>-</b>   | <b>325</b> | <b>761</b> |

PV per ton \$58

**80 Deconstruction Single Family**

| Year                                  | Present Value | 2010       | 2011       | 2012       | 2013       | 2014       |
|---------------------------------------|---------------|------------|------------|------------|------------|------------|
| Program Benefits                      | \$4,218,528   | \$429      | \$1,215    | \$3,530    | \$10,021   | \$26,763   |
| Program Cost                          | \$423,737     | \$20,000   | \$25,000   | \$30,000   | \$30,000   | \$30,000   |
| Net Benefits                          | \$3,794,791   | (\$19,571) | (\$23,785) | (\$26,470) | (\$19,979) | (\$3,237)  |
| <b>Tons avoided through recycling</b> | <b>60,741</b> | <b>4</b>   | <b>10</b>  | <b>30</b>  | <b>86</b>  | <b>231</b> |

PV per ton \$62

**81 Voluntary Assessment**

| Year                                  | Present Value  | 2010     | 2011     | 2012      | 2013       | 2014       |
|---------------------------------------|----------------|----------|----------|-----------|------------|------------|
| Program Benefits                      | \$8,131,930    | \$0      | \$0      | \$6,855   | \$19,461   | \$51,960   |
| Program Cost                          | \$234,676      | \$0      | \$0      | \$10,000  | \$15,000   | \$20,000   |
| Net Benefits                          | \$7,897,254    | \$0      | \$0      | (\$3,145) | \$4,461    | \$31,960   |
| <b>Tons avoided through recycling</b> | <b>117,087</b> | <b>-</b> | <b>-</b> | <b>59</b> | <b>168</b> | <b>448</b> |

PV per ton \$67

**92 ABC BAN**

| Year                                  | Present Value | 2010     | 2011      | 2012       | 2013       | 2014         |
|---------------------------------------|---------------|----------|-----------|------------|------------|--------------|
| Program Benefits                      | \$1,475,275   | \$0      | \$0       | \$53,232   | \$102,551  | \$148,019    |
| Program Cost                          | \$82,124      | \$0      | \$5,000   | \$10,000   | \$10,000   | \$10,000     |
| Net Benefits                          | \$1,393,150   | \$0      | (\$5,000) | \$43,232   | \$92,551   | \$138,019    |
| <b>Tons avoided through recycling</b> | <b>19,187</b> | <b>-</b> | <b>-</b>  | <b>459</b> | <b>884</b> | <b>1,276</b> |

PV per ton \$73

**94 Facility Certification**

| Year                                  | Present Value  | 2010     | 2011       | 2012       | 2013       | 2014         |
|---------------------------------------|----------------|----------|------------|------------|------------|--------------|
| Program Benefits                      | \$9,546,010    | \$0      | \$0        | \$29,863   | \$80,509   | \$193,247    |
| Program Cost                          | \$273,104      | \$0      | \$35,000   | \$15,000   | \$15,000   | \$30,000     |
| Net Benefits                          | \$9,272,906    | \$0      | (\$35,000) | \$14,863   | \$65,509   | \$163,247    |
| <b>Tons avoided through recycling</b> | <b>134,344</b> | <b>-</b> | <b>-</b>   | <b>257</b> | <b>694</b> | <b>1,666</b> |

PV per ton \$69

**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

**Total**

| Year                                  | 2015          | 2016          | 2017          | 2018          | 2019          | 2020          |
|---------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Program Benefits                      | \$1,531,475   | \$2,543,242   | \$3,437,967   | \$4,133,172   | \$4,535,080   | \$4,701,184   |
| Program Cost                          | \$215,000     | \$215,000     | \$190,000     | \$180,000     | \$180,000     | \$175,000     |
| Net Benefits                          | \$1,316,475   | \$2,328,242   | \$3,247,967   | \$3,953,172   | \$4,355,080   | \$4,526,184   |
| <b>Tons avoided through recycling</b> | <b>13,202</b> | <b>21,925</b> | <b>29,638</b> | <b>35,631</b> | <b>39,096</b> | <b>40,527</b> |

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**New Programs**

**77 Bans beyond ABC 2014**

| Year                                  | 2015         | 2016         | 2017          | 2018          | 2019          | 2020          |
|---------------------------------------|--------------|--------------|---------------|---------------|---------------|---------------|
| Program Benefits                      | \$602,970    | \$1,003,207  | \$1,336,516   | \$1,587,192   | \$1,728,984   | \$1,783,824   |
| Program Cost                          | \$55,000     | \$85,000     | \$60,000      | \$45,000      | \$65,000      | \$45,000      |
| Net Benefits                          | \$547,970    | \$918,207    | \$1,276,516   | \$1,542,192   | \$1,663,984   | \$1,738,824   |
| <b>Tons avoided through recycling</b> | <b>5,198</b> | <b>8,648</b> | <b>11,522</b> | <b>13,683</b> | <b>14,905</b> | <b>15,378</b> |

PV per ton

**78 Bans beyond ABC 2013**

| Year                                  | 2015         | 2016         | 2017         | 2018         | 2019         | 2020         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$170,836    | \$267,837    | \$322,679    | \$347,090    | \$354,770    | \$354,325    |
| Program Cost                          | \$85,000     | \$60,000     | \$45,000     | \$65,000     | \$45,000     | \$45,000     |
| Net Benefits                          | \$85,836     | \$207,837    | \$277,679    | \$282,090    | \$309,770    | \$309,325    |
| <b>Tons avoided through recycling</b> | <b>1,473</b> | <b>2,309</b> | <b>2,782</b> | <b>2,992</b> | <b>3,058</b> | <b>3,055</b> |

PV per ton

**80 Deconstruction Single Family**

| Year                                  | 2015       | 2016         | 2017         | 2018         | 2019         | 2020         |
|---------------------------------------|------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$66,325   | \$148,964    | \$261,749    | \$372,761    | \$446,765    | \$484,569    |
| Program Cost                          | \$30,000   | \$30,000     | \$30,000     | \$30,000     | \$30,000     | \$30,000     |
| Net Benefits                          | \$36,325   | \$118,964    | \$231,749    | \$342,761    | \$416,765    | \$454,569    |
| <b>Tons avoided through recycling</b> | <b>572</b> | <b>1,284</b> | <b>2,256</b> | <b>3,213</b> | <b>3,851</b> | <b>4,177</b> |

PV per ton

**81 Voluntary Assessment**

| Year                                  | 2015         | 2016         | 2017         | 2018         | 2019         | 2020         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$128,696    | \$288,705    | \$506,370    | \$719,817    | \$861,701    | \$934,085    |
| Program Cost                          | \$20,000     | \$20,000     | \$20,000     | \$20,000     | \$20,000     | \$20,000     |
| Net Benefits                          | \$108,696    | \$268,705    | \$486,370    | \$699,817    | \$841,701    | \$914,085    |
| <b>Tons avoided through recycling</b> | <b>1,109</b> | <b>2,489</b> | <b>4,365</b> | <b>6,205</b> | <b>7,428</b> | <b>8,052</b> |

PV per ton

**92 ABC BAN**

| Year                                  | 2015         | 2016         | 2017         | 2018         | 2019         | 2020         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$170,150    | \$176,872    | \$166,477    | \$156,765    | \$144,771    | \$128,169    |
| Program Cost                          | \$10,000     | \$5,000      | \$5,000      | \$5,000      | \$5,000      | \$5,000      |
| Net Benefits                          | \$160,150    | \$171,872    | \$161,477    | \$151,765    | \$139,771    | \$123,169    |
| <b>Tons avoided through recycling</b> | <b>1,467</b> | <b>1,525</b> | <b>1,435</b> | <b>1,351</b> | <b>1,248</b> | <b>1,105</b> |

PV per ton

**94 Facility Certification**

| Year                                  | 2015         | 2016         | 2017         | 2018         | 2019         | 2020         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$392,498    | \$657,657    | \$844,177    | \$949,546    | \$998,089    | \$1,016,211  |
| Program Cost                          | \$15,000     | \$15,000     | \$30,000     | \$15,000     | \$15,000     | \$30,000     |
| Net Benefits                          | \$377,498    | \$642,657    | \$814,177    | \$934,546    | \$983,089    | \$986,211    |
| <b>Tons avoided through recycling</b> | <b>3,384</b> | <b>5,669</b> | <b>7,277</b> | <b>8,186</b> | <b>8,604</b> | <b>8,760</b> |

PV per ton

**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

**Total**

| Year                                  | 2021          | 2022          | 2023          | 2024          | 2025          | 2026          |
|---------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Program Benefits                      | \$4,955,366   | \$5,049,612   | \$4,973,231   | \$4,911,127   | \$4,769,547   | \$4,695,173   |
| Program Cost                          | \$180,000     | \$180,000     | \$175,000     | \$180,000     | \$180,000     | \$175,000     |
| Net Benefits                          | \$4,775,366   | \$4,869,612   | \$4,798,231   | \$4,731,127   | \$4,589,547   | \$4,520,173   |
| <b>Tons avoided through recycling</b> | <b>42,719</b> | <b>43,531</b> | <b>42,873</b> | <b>42,337</b> | <b>41,117</b> | <b>40,476</b> |

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**New Programs**

**77 Bans beyond ABC 2014**

| Year                                  | 2021          | 2022          | 2023          | 2024          | 2025          | 2026          |
|---------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Program Benefits                      | \$1,873,416   | \$1,904,547   | \$1,873,552   | \$1,849,254   | \$1,795,604   | \$1,767,480   |
| Program Cost                          | \$45,000      | \$65,000      | \$45,000      | \$45,000      | \$65,000      | \$45,000      |
| Net Benefits                          | \$1,828,416   | \$1,839,547   | \$1,828,552   | \$1,804,254   | \$1,730,604   | \$1,722,480   |
| <b>Tons avoided through recycling</b> | <b>16,150</b> | <b>16,419</b> | <b>16,151</b> | <b>15,942</b> | <b>15,479</b> | <b>15,237</b> |

PV per ton

**78 Bans beyond ABC 2013**

| Year                                  | 2021         | 2022         | 2023         | 2024         | 2025         | 2026         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$366,610    | \$370,390    | \$363,487    | \$358,451    | \$347,936    | \$342,445    |
| Program Cost                          | \$65,000     | \$45,000     | \$45,000     | \$65,000     | \$45,000     | \$45,000     |
| Net Benefits                          | \$301,610    | \$325,390    | \$318,487    | \$293,451    | \$302,936    | \$297,445    |
| <b>Tons avoided through recycling</b> | <b>3,160</b> | <b>3,193</b> | <b>3,134</b> | <b>3,090</b> | <b>2,999</b> | <b>2,952</b> |

PV per ton

**80 Deconstruction Single Famil**

| Year                                  | 2021         | 2022         | 2023         | 2024         | 2025         | 2026         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$523,724    | \$540,647    | \$535,547    | \$530,080    | \$515,250    | \$507,382    |
| Program Cost                          | \$30,000     | \$30,000     | \$30,000     | \$30,000     | \$30,000     | \$30,000     |
| Net Benefits                          | \$493,724    | \$510,647    | \$505,547    | \$500,080    | \$485,250    | \$477,382    |
| <b>Tons avoided through recycling</b> | <b>4,515</b> | <b>4,661</b> | <b>4,617</b> | <b>4,570</b> | <b>4,442</b> | <b>4,374</b> |

PV per ton

**81 Voluntary Assessment**

| Year                                  | 2021         | 2022         | 2023         | 2024         | 2025         | 2026         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$1,009,329  | \$1,041,849  | \$1,031,988  | \$1,021,440  | \$992,859    | \$977,694    |
| Program Cost                          | \$20,000     | \$20,000     | \$20,000     | \$20,000     | \$20,000     | \$20,000     |
| Net Benefits                          | \$989,329    | \$1,021,849  | \$1,011,988  | \$1,001,440  | \$972,859    | \$957,694    |
| <b>Tons avoided through recycling</b> | <b>8,701</b> | <b>8,981</b> | <b>8,896</b> | <b>8,806</b> | <b>8,559</b> | <b>8,428</b> |

PV per ton

**92 ABC BAN**

| Year                                  | 2021         | 2022       | 2023       | 2024       | 2025       | 2026       |
|---------------------------------------|--------------|------------|------------|------------|------------|------------|
| Program Benefits                      | \$116,623    | \$107,301  | \$100,299  | \$96,876   | \$93,275   | \$91,523   |
| Program Cost                          | \$5,000      | \$5,000    | \$5,000    | \$5,000    | \$5,000    | \$5,000    |
| Net Benefits                          | \$111,623    | \$102,301  | \$95,299   | \$91,876   | \$88,275   | \$86,523   |
| <b>Tons avoided through recycling</b> | <b>1,005</b> | <b>925</b> | <b>865</b> | <b>835</b> | <b>804</b> | <b>789</b> |

PV per ton

**94 Facility Certification**

| Year                                  | 2021         | 2022         | 2023         | 2024         | 2025         | 2026         |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$1,065,664  | \$1,084,877  | \$1,068,357  | \$1,055,026  | \$1,024,622  | \$1,008,650  |
| Program Cost                          | \$15,000     | \$15,000     | \$30,000     | \$15,000     | \$15,000     | \$30,000     |
| Net Benefits                          | \$1,050,664  | \$1,069,877  | \$1,038,357  | \$1,040,026  | \$1,009,622  | \$978,650    |
| <b>Tons avoided through recycling</b> | <b>9,187</b> | <b>9,352</b> | <b>9,210</b> | <b>9,095</b> | <b>8,833</b> | <b>8,695</b> |

PV per ton

**Appendix D: Economic Analysis of New Waste Prevention and Recycling Programs**

**Total**

| Year                                  | 2027          | 2028          | 2029          | 2030          |
|---------------------------------------|---------------|---------------|---------------|---------------|
| Program Benefits                      | \$4,730,579   | \$4,772,086   | \$4,794,913   | \$4,856,863   |
| Program Cost                          | \$180,000     | \$180,000     | \$175,000     | \$180,000     |
| Net Benefits                          | \$4,550,579   | \$4,592,086   | \$4,619,913   | \$4,676,863   |
| <b>Tons avoided through recycling</b> | <b>40,781</b> | <b>41,139</b> | <b>41,335</b> | <b>41,870</b> |

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**New Programs**

**77 Bans beyond ABC 2014**

| Year                                  | 2027          | 2028          | 2029          | 2030          |
|---------------------------------------|---------------|---------------|---------------|---------------|
| Program Benefits                      | \$1,780,762   | \$1,796,369   | \$1,804,955   | \$1,828,273   |
| Program Cost                          | \$45,000      | \$65,000      | \$45,000      | \$45,000      |
| Net Benefits                          | \$1,735,762   | \$1,731,369   | \$1,759,955   | \$1,783,273   |
| <b>Tons avoided through recycling</b> | <b>15,351</b> | <b>15,486</b> | <b>15,560</b> | <b>15,761</b> |

PV per ton

**78 Bans beyond ABC 2013**

| Year                                  | 2027         | 2028         | 2029         | 2030         |
|---------------------------------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$345,002    | \$348,020    | \$349,682    | \$354,198    |
| Program Cost                          | \$65,000     | \$45,000     | \$45,000     | \$65,000     |
| Net Benefits                          | \$280,002    | \$303,020    | \$304,682    | \$289,198    |
| <b>Tons avoided through recycling</b> | <b>2,974</b> | <b>3,000</b> | <b>3,014</b> | <b>3,053</b> |

PV per ton

**80 Deconstruction Single Famil**

| Year                                  | 2027         | 2028         | 2029         | 2030         |
|---------------------------------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$511,269    | \$515,778    | \$518,254    | \$524,953    |
| Program Cost                          | \$30,000     | \$30,000     | \$30,000     | \$30,000     |
| Net Benefits                          | \$481,269    | \$485,778    | \$488,254    | \$494,953    |
| <b>Tons avoided through recycling</b> | <b>4,407</b> | <b>4,446</b> | <b>4,468</b> | <b>4,525</b> |

PV per ton

**81 Voluntary Assessment**

| Year                                  | 2027         | 2028         | 2029         | 2030         |
|---------------------------------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$985,185    | \$993,873    | \$998,644    | \$1,011,552  |
| Program Cost                          | \$20,000     | \$20,000     | \$20,000     | \$20,000     |
| Net Benefits                          | \$965,185    | \$973,873    | \$978,644    | \$991,552    |
| <b>Tons avoided through recycling</b> | <b>8,493</b> | <b>8,568</b> | <b>8,609</b> | <b>8,720</b> |

PV per ton

**92 ABC BAN**

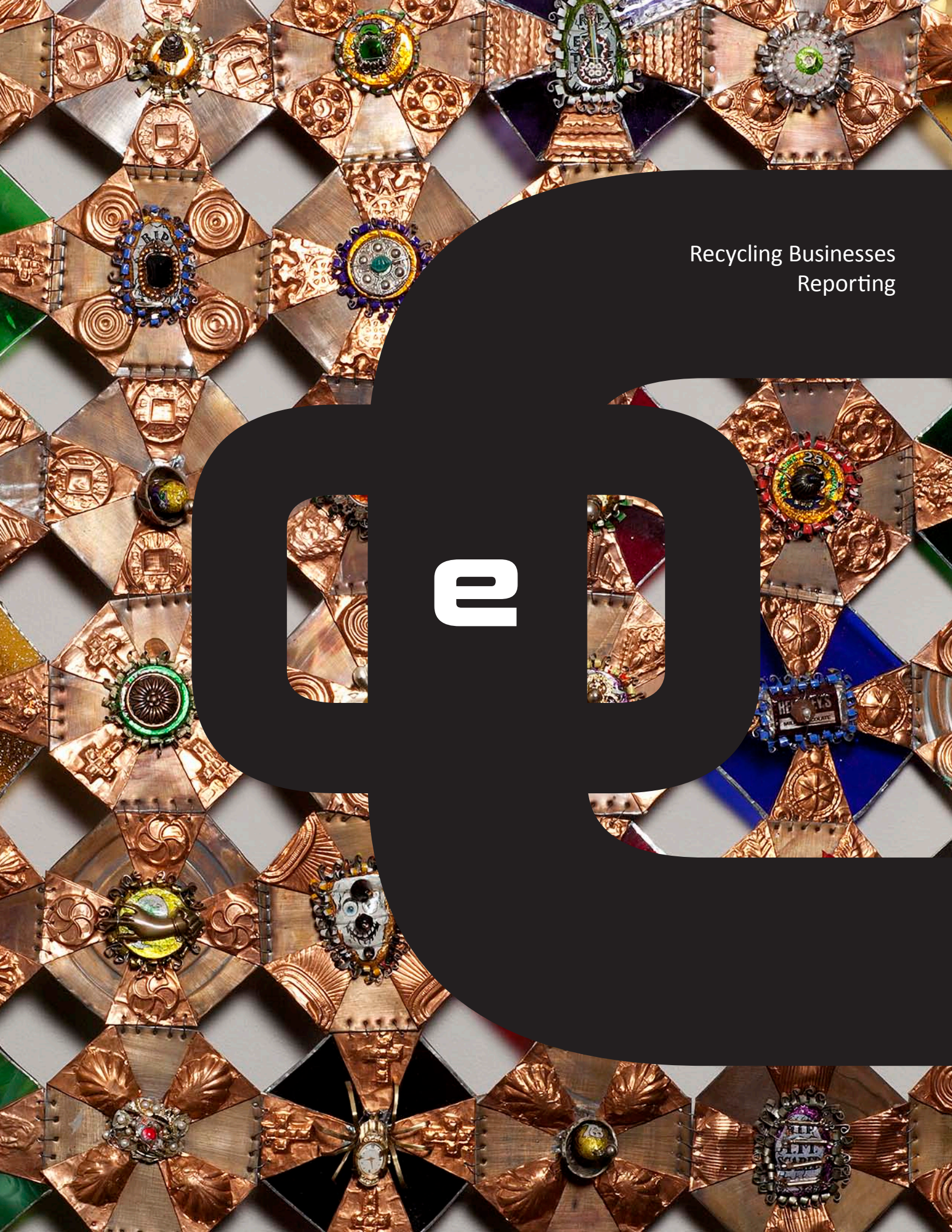
| Year                                  | 2027       | 2028       | 2029       | 2030       |
|---------------------------------------|------------|------------|------------|------------|
| Program Benefits                      | \$92,102   | \$92,869   | \$93,298   | \$94,498   |
| Program Cost                          | \$5,000    | \$5,000    | \$5,000    | \$5,000    |
| Net Benefits                          | \$87,102   | \$87,869   | \$88,298   | \$89,498   |
| <b>Tons avoided through recycling</b> | <b>794</b> | <b>801</b> | <b>804</b> | <b>815</b> |

PV per ton

**94 Facility Certification**

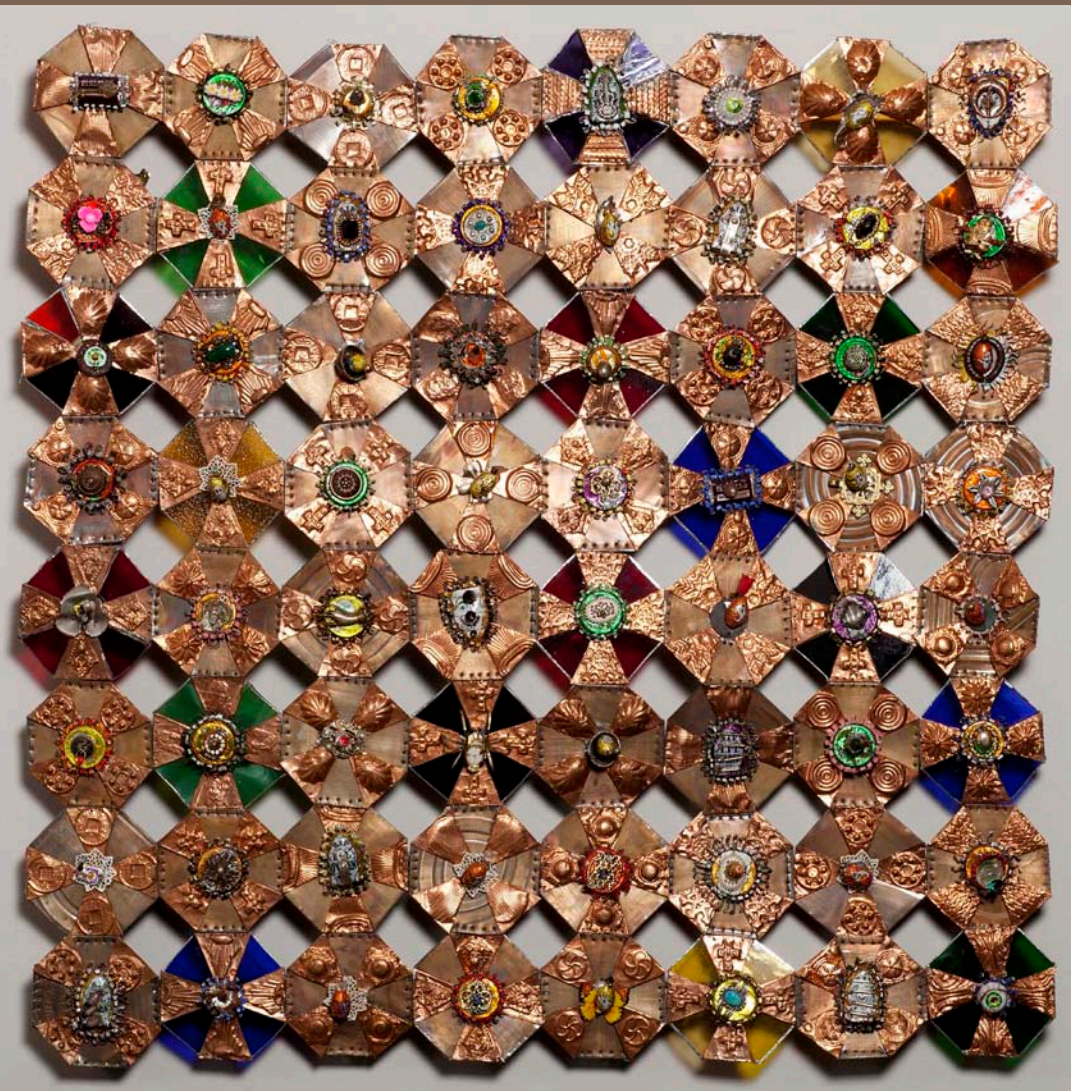
| Year                                  | 2027         | 2028         | 2029         | 2030         |
|---------------------------------------|--------------|--------------|--------------|--------------|
| Program Benefits                      | \$1,016,258  | \$1,025,176  | \$1,030,080  | \$1,043,389  |
| Program Cost                          | \$15,000     | \$15,000     | \$30,000     | \$15,000     |
| Net Benefits                          | \$1,001,258  | \$1,010,176  | \$1,000,080  | \$1,028,389  |
| <b>Tons avoided through recycling</b> | <b>8,761</b> | <b>8,838</b> | <b>8,880</b> | <b>8,995</b> |

PV per ton



Recycling Businesses  
Reporting

e



**Ross Palmer Beecher**

*Candy Cobweb Quilt, 2003*

Wire-stitched metal, paint wood,  
costume jewelry and found objects  
35 x 35.5 x 3 inches

## Appendix E: Recycling Businesses Reporting

The following contains information about the annual reporting required of recycling businesses. This information is taken from the annual letter mailed to Seattle Recycler License holders.

### 2010 Seattle Recycling Annual Report and 2011 Recycler License

#### Who should obtain a City of Seattle Recycler License and file an Annual Report?

You are required to have a Seattle Recycler License if during 2011 your business expects to collect or haul recyclable materials originating in the City of Seattle, regardless of where the materials are to be delivered; or if you will operate a materials recovery facility (MRF) or expect to provide drop boxes or operate one or more drop-off facilities for recyclable materials in the City. **If you engaged in any of these activities in 2010, you must file a completed annual report on the quantities of materials you handled along with your 2011 license application by March 31, 2011.**

Specifically, under Seattle Municipal Code subchapter 6.250.020, a Recycler License and annual reporting is required of collectors and processors of recyclable materials as follows:

**"Collector" means:**

1. A person who operates one or more vehicles for the collection of recyclable materials from residential, commercial or industrial premises or construction sites in the City; or
2. A person engaged in construction, demolition or land clearing who hauls recyclable materials away from job sites in the City; or
3. A person who places drop boxes, kiosks, barrels or other containers in the City where the public may deposit recyclable materials; or
4. A person who maintains one or more business premises in the City where the public may bring recyclable materials, including but not limited to salvaged or surplus building materials and discarded household items and clothing; or
5. A person who, as part of regular business activities in the City, transports recyclable materials, including but not limited to product packaging, oils and food waste, directly from one or more business premises to a recyclable materials processor.

City contractors who pick up residential and/or commercial garbage, recyclable materials, including food and yard waste are collectors under this definition.

**"Processor" means:**

A person who operates a facility that receives recyclable materials originating in the City from collectors or private individuals where such materials are sorted for marketability by type, quality or other criteria and then sold directly to the public for reuse or shipped to a recycling firm or facility for further processing. City contractors who operate transfer stations, materials recovery facilities (MRFs) or other facilities where waste materials are sorted for reshipment or disposal are processors under this definition.

A business such as a recyclable materials processor or MRF located outside the City of Seattle is not required to obtain a Seattle Recycler License unless the business also operates hauling or collection services in Seattle as specified above.

Businesses required to file an annual report should be aware that the list of materials and their definitions are similar and in most cases identical to those required in annual reports that also must be filed with the Department of Ecology (Ecology). The list includes materials whose end uses are outside the state's and City's definition of recycling (such as the burning of used oil or wood scrap for energy generation). Nevertheless, the quantities of these materials handled and not in the end disposed in a landfill should be included in your Recycling Annual Report. These materials will not be included in the City's recycling rate but will be reported separately as tons diverted from the landfill, which remains an important objective.

**Please note:**

1. **The Seattle Recycling Annual Report requires that you separately list tonnages for recyclable materials originating from construction and demolition (C&D) activities.**



2. **Because of this change Seattle and Ecology forms are no longer identical. Use this form for your Seattle Recycling Annual Report. File with the Department of Ecology using only the forms provided by Ecology. (For Ecology forms, contact Layne Nakagawa, recycling survey coordinator at the Department of Ecology, at (360) 407-6409 or e-mail [Layne.nakagawa@ecy.wa.gov](mailto:Layne.nakagawa@ecy.wa.gov).)\***

*\*July 2012 update: for Ecology forms contact Daniel Weston (360) 407-6409, [Daniel.weston@ecy.wa.gov](mailto:Daniel.weston@ecy.wa.gov)*

### Seattle Recycling Annual Report for 2010

#### Instructions:

1. Fill in the information about your business on the **Collector-Processor Identification Form** (Page 3). (Note: Your business identification code is the number the Department of Ecology has assigned you. If this is your first report to Ecology or Seattle, you may not have one.)
2. The City does not release or publish individual company reports; however, you may wish to formally request confidentiality for your firm's annual report forms for 2010. If so, prepare a letter as described at the bottom of Page 3.
3. Review the **Material Type Definitions** on Page 4 for the materials on which you will be reporting. (These definitions may be updated from year to year.)
4. Provide the tonnages of the materials you collected or processed in Seattle during 2010 on the **Materials Form**. The forms provided are substantially similar to the annual reporting forms you are required to provide to the Department of Ecology. **However, the City requires that you itemize recycled materials originating from construction and demolition (C&D) projects and use only City of Seattle forms for reporting. Space is now provided on Page 6 for C&D materials. Photocopies of Ecology forms will no longer be accepted.**
5. Complete the **Destination of Materials Form**, listing the companies to which you sold or delivered recyclable materials and the tonnages sold or delivered during 2010. Space is now provided on Page 8 for C&D materials. **Note that if you use all the blank lines on Page 8 you must copy the form so that each individual buyer of your materials can be shown on a separate line.**
6. When you have finished, please review your entries for completeness and check for errors. On the Materials Form, **be sure you are reporting ONLY Seattle-origin tons**. On the Destination of Materials Form **be sure to report ALL businesses you sold or delivered to in 2010 and that you've entered the final use in each case**. Note that for all forms in this packet, **reporting in tons is required**. For conversion of volume and various units to tons, see the **Volume and Count to Weight Conversion Factors for Recyclables** table on pages 9 and 10.
7. Completed annual reports (pages 3 through 8 of this packet) along with your Recycler License application and \$100 fee should be returned to:  
**City of Seattle, Department of Finance and Administrative Services  
Attn: Iskra Ivanova  
700 5th Avenue Suite 4250  
P.O. Box 34214  
Seattle WA 98124-4214**

Or, you may send an electronic copy in MS Word of your annual report as an email attachment to:

Luis Hillon, Seattle Public Utilities  
[luis.hillon@seattle.gov](mailto:luis.hillon@seattle.gov)

**However, even when filing your annual report electronically, you must send your Recycler License application and fee to the Department of Finance and Administrative Services at the address above.**

## City of Seattle

### SEATTLE PUBLIC UTILITIES

Ray Hoffman, Acting Director

#### 2010 Seattle Recycling Annual Report – Due March 31, 2011

**Recyclable materials collector/processor information, all fields required:**

|                       |         |                                     |         |
|-----------------------|---------|-------------------------------------|---------|
| Business/Company Name |         | ID Code (Provided by Dept. Ecology) |         |
| Contact Person        | Title   |                                     |         |
| Telephone             | FAX     |                                     |         |
| Email                 |         |                                     |         |
| Mailing Address       |         | Business Location (If Different)    |         |
| City                  |         | City                                |         |
| State                 | Zip + 4 | State                               | Zip + 4 |

Check if you are a “Collector”  or “Processor”  under the definitions on page 1.

Did you operate in 2010? Yes  No  If yes, proceed to complete the forms below.

If **NO**, answer the following questions, sign, date and return only this page.

When did you stop operations? \_\_\_\_\_ Do you plan to restart? **Yes**  **No**

If, yes, when? \_\_\_\_\_ (If planning to restart in 2011 you must obtain a Recycler License.)

**Report prepared by (Signature Required):** \_\_\_\_\_ **Date** \_\_\_\_\_

Please note that the City does not release or publish individual company reports. Information you provide as part of the Seattle Recycling Annual Report will be compiled with the information submitted by other companies. If your firm desires confidentiality in the event of a public request for information, please refer to the procedure below.

The information you provide on your Recycling Annual Report forms may be protected from public disclosure under the Public Records Act, RCW 42.56 if the information qualifies as “trade secrets” under the Uniform Trade Secrets Act, RCW 19.108. The Uniform Trade Secrets Act defines a “trade secret” as information that “derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use and is the subject of

## Appendix E: Recycling Businesses Reporting

reasonable efforts to maintain its secrecy.”

If you would like the City to consider the information in your firm’s Recycling Annual Report form to be “trade secrets” under the Uniform Trade Secrets Act, RCW 19.108, and exempt from the disclosure requirements of the Public Records Act, RCW 42.56, please include with your Recycler License application and completed Annual Report a letter to the Director of SPU explaining how the information contained in the survey form constitutes “trade secrets.” Should the City receive a public records request for this information, the City will notify you and you will have the opportunity to present additional information concerning the nature of the information and why it should not be subject to public disclosure.

Lists of recyclers serving the Seattle area can be found at the State of Washington Department of Ecology website [1-800-RECYCLE](http://1-800-RECYCLE). Or by calling 1-800-732-9253.



State Environmental Policy  
Act (SEPA) Documents

**f**



**Evan Blackwell**

*The Disposable Heroes series, 2005*

Various plastics

22 x 10 x 17 inches



Memorandum

Date: July 2, 2012

From: Betty Meyer *Betty Meyer*  
SEPA Responsible Official

To: Vicky Beaumont, Project Manager  
Solid Waste Management Plan Revision

Re: SEPA Closeout

---

This memorandum documents the completion of the SEPA process for the Environmental Checklist and the Threshold Determination of Non-Significance (DNS).

The DNS was issued and sent to the Washington Department of Ecology SEPA Public Information Center on June 7, 2012, and was entered in the SEPA Register. It was published in the Daily Journal of Commerce in the June 7<sup>th</sup> and June 14<sup>th</sup> editions, and included in the Seattle Department of Planning and Development Land Use Information Bulletin issue dated June 7. The DNS was transmitted timely to the Seattle Times and appeared on-line and in the printed edition on June 7.

The comment period ended on June 21<sup>st</sup> and the appeal period ended on June 28, 2012.

No comments were received.

No appeals were filed, the SEPA process is completed, and this non-project action is authorized to proceed, contingent on any other required permits and approvals.



City of Seattle  
Seattle Public Utilities

**Solid Waste Management Plan Revision  
SEPA Determination of Non-Significance (DNS)**

Description of Proposal

In a continued effort to provide reliable, efficient, and environmentally conscious utility services to its customers, Seattle Public Utilities (SPU) has prepared the Preliminary Draft *2011 Solid Waste Plan Revision* (2011 Plan). This Plan updates the 1998 Solid Waste Management Plan, *On the Path to Sustainability*, as amended in 2004. The Plan also satisfies a State requirement to maintain a coordinated, comprehensive solid waste management plan in a current and applicable condition (RCW 70.95).

The 2011 Plan describes how SPU will manage City of Seattle solid waste over the next 20 years and includes recommended strategies in each of three areas:

1. Preventing waste,
2. Increasing recycling and composting, and
3. Improving services.

The Plan does not detail the specific solid waste projects or activities that would be undertaken, but rather, describes the City's goals related to solid waste management and the types of activities necessary to achieve those goals in a safe and economical way. Plan implementation would require future evaluation and development of programs and capital improvement projects designed to address identified solid waste issues and needs.

Before it can be implemented, the 2011 Plan must be adopted by the Seattle City Council and then approved by the Washington State Department of Ecology. Adoption and approval of the 2011 Plan is considered a non-project action under SEPA.

Proponent

Seattle Public Utilities  
Seattle Municipal Tower Suite 4900  
P.O. Box 34018  
Seattle, WA 98124-4018

Location of Proposal

The planning area for the 2011 Plan includes all areas within the municipal limits of the City of Seattle, King County, Washington, including about 82 square miles of land populated by about 610,000 people. SPU owns and operates two major solid waste transfer facilities, the North and South Recycling and Disposal stations located at 1350 North 34th Street (zip code 98106) and 8105 5th Avenue South (zip code 98134), respectively; and the North and South Household Hazardous Waste facilities at 12500 Stone Way North (zip code 98133) and 8100 2nd Avenue South (zip code 98108), respectively. Non-recyclable solid waste from the recycling and disposal stations is typically transported to privately owned intermodal facilities, where it is loaded onto railcars and transported to the Columbia Ridge Regional Landfill in

---

Ray Hoffman, Director  
Seattle Public Utilities  
700 5th Avenue, Suite 4900  
PO Box 34018  
Seattle, WA 98124-4018

Tel (206) 684-5851  
Fax (206) 684-4631  
TDD (206) 233-7241  
[ray.hoffman@seattle.gov](mailto:ray.hoffman@seattle.gov)

<http://www.seattle.gov/util>

*An equal employment opportunity, affirmative action employer. Accommodations for people with disabilities provided on request.*

Arlington, Oregon. Recyclable materials are transported to or picked up by private recycling business. Compostable materials are transported to Cedar Grove, a private composting business. The locations of future program and projects would be identified in the future, prior to implementation.

Lead Agency

Seattle Public Utilities, the lead agency for this proposal, determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request.

This Determination of Non-significance (DNS) is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for fourteen (14) days from the date below.

Copies of the Plan and the environmental checklist are available at:

- Seattle Public Utilities, Director's Office Main Reception Area, Seattle Municipal Tower, Suite 4900, 700 Fifth Avenue, Seattle, Washington
- Seattle Central Library, General Reference Section
- Online at <http://www.seattle.gov/util/SolidWastePlan>

Public and Agency Comments

Comments must be submitted by June 21, 2012 and must be sent to:

Betty Meyer, SEPA Responsible Official  
Seattle Public Utilities  
Seattle Municipal Tower, Suite 4900  
P.O. Box 34018  
Seattle, WA 98124-4018  
206 386-1999  
[betty.meyer@seattle.gov](mailto:betty.meyer@seattle.gov)

Signature: \_\_\_\_\_



Betty Meyer

Issue Date: June 7, 2012

Appeals

Appeals of this DNS must be filed by 5:00 p.m. on June 28, 2012. The appeal must be in writing, accompanied by a \$50.00 filing fee in a check made payable to the City of Seattle, and sent to:

City of Seattle Hearing Examiner  
700 5<sup>th</sup> Avenue Suite 4000  
P.O. Box 94729  
Seattle, WA 98124-4729

You should be prepared to make specific factual objections. Contact the Hearing Examiner at 206-684-0521 to ask about or to make arrangements to read the procedures for SEPA appeals.

For interpretation services please call **206-233-7856**


如需要口譯服務，請撥電話號碼 **206-233-7856**

Para servicios de interpretación por favor llame al **206-233-7856**

**Para sa serbisyo ng tagapagpaliwanag, tumawag sa 206-233-7856**

**Về dịch vụ phiên dịch xin gọi 206-233-7856**





Seattle Solid Waste  
Advisory Committee  
(SWAC) Participation

9



**Marita Dingus**

*Outdoor baby* (hanging), 2010

Pull tabs, champagne wire muselet,  
electric ceramic tubes, plastic curler  
attachments, glass

26 x 9 x 3 inches



## SEATTLE SOLID WASTE ADVISORY COMMITTEE

March 22, 2012

State of Washington  
Department of Ecology  
Waste 2 Resources Program

RE: Documentation of SWAC participation in Seattle's 2011 Solid Waste Plan Revision

Dear Washington Department of Ecology:

The Seattle Solid Waste Advisory Committee (SWAC) offers this letter as documentation that the SWAC has been involved with developing Seattle's Solid Waste Plan (SWP) 2011 Revision.

Our involvement began in 2008 with reviewing and advising on the **SOLID WASTE PLAN 2010 PROJECT GUIDE**, which SPU put together to define the scope and process of updating the SWP. The purpose of the Guide was to ensure project staff moved forward with:

- Clear objectives, outcomes and deliverables
- Comprehensive stakeholder identification
- Critical success factors and risks identified
- Staffing, decision, and review processes laid out

After that, the SWAC has continued to review and comment on many aspects of the Plan's development, which is documented in the SWAC's monthly meeting minutes. The meeting minutes are available at SPU's advisory committee web page at [Seattle Public Utilities -- Meeting Schedule & Notes](#). SPU's advisory committee staff also keep meeting minutes in their files.

Some key milestones where the SWAC had direct involvement include:

- Setting the Plan's new outline
- Reviewing initial new recycling program alternatives, MSW and C&D

## SEATTLE SOLID WASTE ADVISORY COMMITTEE

- Reviewing program modeling results and proposed recommendations
- Reviewing the first full version of the draft document
- Commenting on the feedback from the public involvement process
- Reviewing changes to the Plan's recommendations from the public involvement process

In addition, over the past few years the SWAC has talked about many of the issues and programs contained in the Plan, including

- Waste prevention: reuse, problem products, product stewardship, junk mail and yellow pages opt-out
- Commercial and C&D programming to improve recycling
- Organics diversion: mandatory multi-family organics subscription, quick-serve food packaging
- Biennial rate studies and rates incentives for recycling
- Every other week single-family garbage collection
- Facility rebuilds
- Alternative disposal technologies

The SWAC continues to discuss many of these topics and others, as we serve to ensure solid waste programming in Seattle is environmentally sound and brings the best possible value to Seattle's ratepayers. We appreciate SPU's diligent efforts to involve the SWAC in this process, and commend their approach to citizen feedback and involvement. We are confident the 2011 Plan Revision puts forward a balance of these values and poises Seattle for picking up the pace toward zero waste.

Sincerely



Julie Pond, Chair



Resolution of Adoption

h



**Julia Haack**

*Tracks 2*, 2009

Latex paint on salvaged wood

54 x 44 x 3 inches

Victoria Beaumont  
SPU Solid Waste Plan RES  
December 11, 2012  
Version #4

**CITY OF SEATTLE**  
**RESOLUTION 31426**

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A RESOLUTION adopting Seattle’s Solid Waste Plan 2011 Revision to the 1998 Plan “On the Path to Sustainability,” as amended by the 2004 Comprehensive Plan Amendment.

WHEREAS, the City Council adopted Seattle’s Comprehensive Solid Waste Management Plan “On the Path to Sustainability” in August 1998, Resolution 29805; and

WHEREAS, the City Council adopted the 2004 Comprehensive Solid Waste Plan Amendment to the 1998 Plan “On the Path to Sustainability” in March 2005, Resolution 30750; and

WHEREAS, Resolution 30990 reaffirmed the goal in the 2004 Comprehensive Solid Waste Plan Amendment to recycle 60 percent of the City’s municipal solid waste, and established the year 2012 to achieve the 60 percent goal, and established an additional goal to achieve 70 percent recycling of municipal solid waste by the year 2025; and

WHEREAS, recycling achievement since the adoption of Resolution 30990 has been slower than expected, and analysis done for the 2011 revision showed that 60 percent recycling of municipal solid waste is achievable in the year 2015, and that 70 percent recycling of municipal solid waste is achievable by the year 2022; and

WHEREAS, the State of Washington requires that local governments develop comprehensive solid waste management plans and that they be updated every five years; and

WHEREAS, the Washington State Department of Ecology has determined a Plan Revision is required; and

WHEREAS, Seattle has developed a Plan Revision, which has included opportunities for public input on its crucial program elements; and

WHEREAS, the City’s Solid Waste Advisory Committee participated in the development of the Plan Revision; NOW, THEREFORE,

**BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF SEATTLE, THE  
MAYOR CONCURRING, THAT:**

Section 1. Seattle’s Solid Waste Plan 2011 Revision: Picking Up The Pace Toward Zero Waste, attached hereto as Attachment 1, is hereby adopted as the solid waste management plan



Victoria Beaumont  
SPU Solid Waste Plan RES  
December 11, 2012  
Version #4

1 for the City of Seattle to provide long-term planning direction and guide solid waste program  
2 development over the next five years.

3 Section 2. Goals. The City establishes the following recycling goals recommended in  
4 Seattle's Solid Waste Plan 2011 Revision. These goals replace the recycling goals established by  
5 Subsection 1.A of Resolution 30990.

6 A. The City will recycle 60 percent of the municipal solid waste produced within the city  
7 by 2015, and 70 percent of the municipal solid waste produced within the city by  
8 2022.

9 B. The City will recycle 70 percent of the construction and demolition waste produced  
10 within the city by the year 2020.





Victoria Beaumont  
SPU Solid Waste Plan RES  
December 11, 2012  
Version #4

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Adopted by the City Council the 11<sup>th</sup> day of February, 2013, and  
signed by me in open session in authentication of its adoption this 11<sup>th</sup> day  
of February, 2013.

Bruce D. Farrell  
President Pro Tem of the City Council

THE MAYOR CONCURRING:

Michael McGinn  
Michael McGinn, Mayor

Filed by me this 20 day of February, 2013.

Monica M. Simmons  
Monica Martinez Simmons, City Clerk

(Seal)

Attachment 1: Seattle's Solid Waste Plan 2011 Revision: Picking Up The Pace Toward Zero  
Waste



## **Appendix H: Resolution of Adoption**

[City Clerk's Office Note: Because of its size, the exhibit to Resolution 31426 has been saved separately for electronic display and downloading. The file is a PDF document requiring Adobe Reader or equivalent program to view.]

### **Exhibit 1 to Resolution 31426**

[Picking Up the Pace Toward Zero Waste: 2011 Plan Revision, Final Draft](#) (58.5 MB)

Victoria Beaumont  
 SPU Solid Waste Plan FISC  
 September 14, 2012  
 Version #2

Form revised: December 6, 2011

**FISCAL NOTE FOR NON-CAPITAL PROJECTS**

| <b>Department:</b>       | <b>Contact Person/Phone:</b> | <b>CBO Analyst/Phone:</b> |
|--------------------------|------------------------------|---------------------------|
| Seattle Public Utilities | Vicky Beaumont 233-7856      | Karl Stickel 684-8085     |

**Legislation Title:** A RESOLUTION adopting Seattle’s Solid Waste Plan 2011 Revision to the 1998 Plan “On the Path to Sustainability,” as amended by the 2004 Comprehensive Plan Amendment.

**Summary of the Legislation:** The resolution would adopt the 2011 Revision to Seattle’s 1998 Solid Waste Plan, as amended by the 2004 Solid Waste Plan Amendment. The Plan provides long-term vision and guides the City’s solid waste management programs for the next five years. More specifically, the 2011 Revision confirms the goals, policies and program direction established in the 1998 Plan, as updated by the 2004 Plan Amendment. It describes progress towards established goals and objectives, and identifies strategies for continuing to move towards these goals over the next five years and through 2020. The adopted 2011 Revision will be submitted to the Washington State Department of Ecology for approval.

**Background:**

State law requires local governments develop solid waste plans and that they be updated every five years. The Washington State Department of Ecology reviews and approves adopted plans. The 2011 Revision has a 20-year horizon, recommending solid waste programs for the next five years, and providing direction for the following 15 years. The City adopted the 1998 Plan “On the Road to Sustainability” in 1998. The 2004 Plan Amendment was adopted by Resolution 30750 in 2005. Funding for particular solid waste programs comes through the Seattle Public Utilities’ (SPU’s) annual budget process.

The Solid Waste Plan 2011 Revision does not establish new policy direction. The Revision confirms the vision, goals and program direction established in the 1998 Plan, as updated by the 2004 Plan Amendment, but also revises the timeline for achieving some of these goals. The 2011 Revision also summarizes progress since 2004 and describes how Seattle intends to proceed through the year 2020 towards achieving the established goals.

The Plan will continue to be implemented through the 2013-2014 Budget and Capital Improvement Projects (and subsequent years), as well as through other legislation e.g. ordinances adopting solid waste contract amendments. This resolution itself does not make appropriations or change spending, although it does establish programmatic expectations.

More specifically, the 2011 Revision:

- Lays out waste generation trends
- Discusses waste prevention and its transitioning role in managing discards
- Describes what SPU does with typical household and business waste that is produced in



**Appendix H: Resolution of Adoption**

Victoria Beaumont  
SPU Solid Waste Plan FISC  
September 14, 2012  
Version #2

the city

- Discusses other wastes the SPU system needs to manage
- Spells out the Plan’s future and financing
- Makes recommendations for the future affecting Seattle’s solid waste system, and for increasing waste prevention and recycling.

Municipal Solid Waste system and facilities recommendations include:

- Staying the course regarding SPU’s core system by continuing competitive contracting with private providers for collection, processing and disposal services
- Completing planned infrastructure improvements of rebuilding the two City-owned transfer stations
- Planning for contingencies such as disasters and the Alaskan Way Viaduct closure
- Continuing to monitor and maintain the City’s closed landfills

Waste reduction and recycling recommendations include:

- Keeping on with Seattle’s current slate of waste reduction and recycling programs
- Adjusting municipal solid waste recycling goal years to align with projected achievement of 60 percent by 2015 and 70 percent by 2022
- Creating for the first time a recycling goal for construction and demolition debris (C&D) of 70 percent by the year 2020
- Increasing education and enforcement targeted to the residential, self-haul, and commercial sectors
- Phasing in disposal bans on target materials such as compostable organic waste, clean wood, plastic film, asphalt roofing shingles, paving material (asphalt, brick, concrete), plastic bags
- Implementing programs for diverting or reducing carpet, junk mail, phone books, pet waste and diapers
- Continuing to build waste prevention activities such as those that foster product stewardship, reuse, sustainable building, on-site organics management, and City green purchasing.

The 2011 Revision discusses service level maintenance strategies for Clean City programs addressing graffiti, illegal dumping, and litter. Seattle is a partner agency in the Local Hazardous Waste Management Plan (LHWMP) for the local management of moderate risk waste (MRW), and contributes by running two MRW collection facilities and other activities under the aegis of LHWMP.

Please check one of the following:

**This legislation does not have any financial implications.**

**This legislation has financial implications.**

**Other Implications:**



Victoria Beaumont  
 SPU Solid Waste Plan FISC  
 September 14, 2012  
 Version #2

- a) Does the legislation have indirect financial implications, or long-term implications?**  
 Yes. The legislation has indirect and long-term financial implications. If all the solid waste program recommendations in the Plan Revision were implemented, solid waste budget line items would shift over time. Also, the recommendations will slow the growth of the Solid Waste Fund revenue requirement, compared to staying with current programs. Decisions regarding specific program funding levels would occur via the budget process. Chapter 6, section 6.3 “Financing the Plan” contains a more complete discussion about financing Seattle’s Solid Waste System.
- b) What is the financial cost of not implementing the legislation?**  
 State law requires local governments develop solid waste plans and that they be updated every five years. Adoption of the solid waste plan occurs by legislative action by the Executive and City Council. The financial cost of not having a valid plan in place would be small, at least in the short term. The long term financial costs are unknown.
- c) Does this legislation affect any departments besides the originating department?**  
 Yes. Implementation of the new goal for recycling of construction and demolition debris (C&D) will require coordination between SPU and the Department of Planning and Development, which regulates development and issues building permits.
- d) What are the possible alternatives to the legislation that could achieve the same or similar objectives?**  
 It would be possible to develop a more aggressive program implementation timeline. That would require greater near-term implementation costs, but savings would also be realized sooner. The process of developing the Solid Waste Plan 2011 Revision included analyzing multiple possible program changes and timing. The final set of recommendations included in the Plan, and their implementation timeline, represent what SPU and stakeholders believe to be a good balance between aggressively pursuing zero waste goals and feasibility.
- e) Is a public hearing required for this legislation?**  
 No. A public hearing on the resolution is not required by the State. State solid waste plan guidelines require public involvement for the development of the Preliminary Draft. SPU carried out the Plan’s public involvement plan late summer to early fall 2011 and received feedback from hundreds of individuals, several groups, and the Seattle Solid Waste Advisory Committee as part of the process to develop the 2011 Plan Revision (as documented in Appendix C in the Plan).
- f) Is publication of notice with *The Daily Journal of Commerce* and/or *The Seattle Times* required for this legislation?**  
 No. However, on June 7, 2012 the SEPA Determination of Non-Significance (DNS) for the Plan was published in the DJC, the Seattle Times, and DPD’s Land Use Information Bulletin. The DNS was also entered in the Washington State Department of Ecology SEPA Public Information Center SEPA Register.



**Appendix H: Resolution of Adoption**

Victoria Beaumont  
SPU Solid Waste Plan FISC  
September 14, 2012  
Version #2

**g) Does this legislation affect a piece of property?**

No

**h) Other Issues:**

SPU, the Mayor and the Council took the Plan's recommendations and timeline into account in developing and approving Solid Waste Fund budgets for 2013-2014 and solid waste rates for 2013 through 2016, but also adopted some cuts to SPU's 2013-2014 budget. These budget cuts were intended to moderate the solid waste rate increases, but they mean that active monitoring and management will be required on SPU's part to achieve the near-term goal of recycling 60 percent municipal solid waste by 2015. SPU will plan to reallocate funding across its programs within the Solid Waste Fund in 2014-2015 to help achieve this goal and the other goals specified in the Plan.

**List attachments to the fiscal note below:**

None





City of Seattle  
Office of the Mayor

December 18, 2012

Honorable Sally J. Clark  
President  
Seattle City Council  
City Hall, 2<sup>nd</sup> Floor

Dear Council President Clark:

I am pleased to transmit the attached proposed Council Resolution that would adopt Seattle's Solid Waste Plan 2011 Revision "Picking Up the Pace Toward Zero Waste." This document will guide Seattle's solid waste management programs for the next five years while providing vision and direction for the following 15 years.

State law requires local governments develop solid waste plans and that they be updated every five years. At a high level, the plan recommends no changes regarding SPU's core service delivery system and continuing competitive contracting with private providers for collection, processing and disposal services. It proposes to change Seattle's solid waste recycling goal years to align with projected achievement of 60 percent by 2015 and 70 percent by 2022 and would establish for the first time a recycling goal for construction and demolition debris. The plan would also phase in disposal bans on targeted materials such as compostable organic waste, clean wood and asphalt roofing shingles.

Funding for particular solid waste programs comes through the Seattle Public Utilities' annual budget process. For 2013, I proposed and the Council endorsed several short-term adjustments to SPU's solid waste budget to moderate the 2013 rate increase. This was appropriate in view of the lingering effects of the recession. However, sustaining the long-term vision of the Plan, and the eventual savings it will bring, will require a commitment from all of us to make the near term investments or prioritizations that will move us down the road to success.

This document has many purposes beyond meeting regulatory requirements. It explains to the public how current and future programs work and helps SPU prepare and run solid waste programs. And it helps City decision makers select among the many options that will increase recycling and pick up the pace toward zero waste. Thank you for your consideration of this legislation. Should you have questions, please contact the Plan's project manager Vicky Beaumont at 233-7856, or Timothy Croll, Solid Waste Director, at 684-7834.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael McGinn".

Michael McGinn  
Mayor of Seattle

cc: Honorable Members of the Seattle City Council

Michael McGinn, Mayor  
Office of the Mayor  
600 Fourth Avenue, 7<sup>th</sup> Floor  
PO Box 94749  
Seattle, WA 98124-4749

Tel (206) 684-4000  
Fax (206) 684-5360  
TDD (206) 615-0476  
mike.mcinn@seattle.gov



RESOLUTION No. 31426

A RESOLUTION adopting Seattle's Solid Waste Plan 2011 Revision to the 1998 Plan "On the Path to Sustainability," as amended by the 2004 Comprehensive Plan Amendment.

*Jan Gulson*

*2/5/13 Liberman, Utilities, and Center Adopt 3 (Lieberman, Utilities) - 0*

*2/11/13 Full Council ADOPTED 8-0 (Lieberman, Clark)*

|             |         |            |                              |
|-------------|---------|------------|------------------------------|
| Introduced: | 1-22-13 | By:        | Liberman, Utilities + Center |
| Referred:   |         | To:        |                              |
| Referred:   |         | To:        |                              |
| Reported:   | 2/11/13 | Signed:    | <i>[Signature]</i> 2.20.13   |
| Passed:     | 8-0     | Published: | T.H.                         |
| Filed:      | 2-20-13 |            |                              |

LAW DEPARTMENT

SHAW 107 Y15P17704





Zero Waste

Seattle  
 Public  
Utilities



Zero Waste

## List of Acronyms

|       |                                                     |
|-------|-----------------------------------------------------|
| ADC   | alternative daily cover                             |
| BIA   | business improvement area                           |
| BPA   | bisphenol A                                         |
| C&D   | construction and demolition                         |
| CESQG | conditionally exempt small quantity generator waste |
| CFC   | chlorofluorocarbons                                 |
| CIP   | capital improvement program                         |
| COOP  | Continuity of Operations Plan                       |
| DOC   | Department of Corrections                           |
| DPD   | Department of Planning and Development              |
| DRRP  | Disaster Readiness and Response Plan                |
| EJNA  | Environmental Justice Network in Action             |
| EJSE  | Environmental Justice and Services Equity           |
| EOW   | every other week                                    |
| EPR   | Extended Producer Responsibility                    |
| EPS   | expanded polystyrene (Styrofoam)                    |
| FEMA  | Federal Emergency Management Agency                 |
| FORC  | Friends of Recycling and Composting                 |
| G&A   | General and Administrative                          |
| G&E   | General Expense                                     |
| HHW   | household hazardous waste                           |
| HMA   | hot mix asphalt                                     |
| IPM   | integrated pest management                          |
| IWS   | industrial waste stabilization                      |
| LEED  | Leadership in Energy and Environmental Design       |
| LFG   | landfill gas                                        |
| LHWMP | Local Hazardous Waste Management Program            |
| MID   | Metropolitan Improvement District                   |
| MOAs  | memoranda of agreement                              |
| MRW   | moderate risk waste                                 |
| MSW   | municipal solid waste                               |
| MTBE  | methyl tert-butyl ether                             |
| NNYD  | Northwest Natural Yard Days                         |
| NRDS  | North Recycling Disposal Station                    |
| NTS   | North Transfer Station                              |
| NWPSC | Northwest Product Stewardship Council               |
| OCC   | old corrugated cardboard                            |
| PSI   | Product Stewardship Institute                       |
| PVC   | polyvinyl chloride                                  |
| RAS   | recycled asphalt shingles                           |
| RCW   | Revised Code of Washington                          |
| RPA   | Recycling Potential Assessment                      |
| RTO   | Recovery Time Objectives                            |
| SEPA  | State Environmental Policy Act                      |
| SPU   | Seattle Public Utilities                            |
| SRDS  | South Recycling Disposal Station                    |
| STS   | South Transfer Station                              |
| SWP   | Solid Waste Plan                                    |
| WMI   | Waste Management Incorporated                       |

# Summary of Stakeholder Outreach Feedback On Aug 2011 Seattle’s Solid Waste Plan Revision Preview Draft

**Note: Most feedback on construction and demolition debris (C&D) recycling recommendations in Chapter 5 is captured in a separate document: *2011 Stakeholder Outreach and Responsiveness Summary – Proposed Construction and Demolition Recommendations in Seattle’s Comprehensive Solid Waste Management Plan***

| Plan Element | Plan Recommendation or Section | Source Type                          | Comment or Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------|--------------------------------|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Overall      | Overall                        | Public Schools                       | <ul style="list-style-type: none"> <li>➤ Filled out the survey. However, it seemed targeted toward homeowners not business owners or facility managers so didn’t feel it was relevant to my work.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Overall      | Overall                        | Solid waste industry                 | <ul style="list-style-type: none"> <li>➤ Supports the Plan’s goals to include “environmentally responsible solid waste management as a cornerstone strategy in climate protection plans.”</li> <li>➤ Supports the main elements of the plan recommendation matrix</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Overall      | Overall                        | Ecology                              | <ul style="list-style-type: none"> <li>➤ Commends SPU’s continued vision and leadership in zero waste. It is vital to successful waste prevention/reduction. Seattle’s effort support and implement many of the principles of the state’s Solid and Hazardous Waste Plan (The Beyond Waste Plan).</li> <li>➤ Overall, the outline of the Plan, the matrices tracking progress, the graphics, charts and maps are very user-friendly.</li> <li>➤ When electronics reuse, refurbishing and donation is referenced, consider describing the city’s efforts to ensure local and proper use/handling.</li> <li>➤ Consider defining/clarifying the word “discard.” Chapter 4 is titled Seattle’s MSW System: Managing Discards.</li> </ul>                                                                                                                                                                                                                                                                             |
| Overall      | Overall                        | Citizen                              | <ul style="list-style-type: none"> <li>➤ Your survey was hard to find.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Overall      | Overall                        | Seattle Public Utilities employee    | <ul style="list-style-type: none"> <li>➤ Various editorial comments: places where text could be clearer, style suggestions, grammar</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Overall      | Overall                        | Seattle Public Utilities staff group | <ul style="list-style-type: none"> <li>➤ Nice range of proposals presented.</li> <li>➤ Nice way of listing recommendations (in a matrix).</li> <li>➤ Like that the Plan is on-line.</li> <li>➤ The Plan needs to talk about inclusive outreach to our more diverse customers. SPU is already making an effort in this regard, but h Plan doesn’t reflect it. The Plan assumption is that all customers will easily understand the growing list of what can and can’t be disposed of, and where. For many SPU customers, barriers exist to both understanding (language and education) and cultural practices, which impact the recycling rate. What is SPU’s plan to help remove these barriers? Is the barrier a lack of customer information/education or do other factors exist that hold down the recycling rate, and if so, what are the plans to address those barriers?</li> <li>➤ Missing commitment to inclusive outreach, description of outreach planned, how it will address SPU and city</li> </ul> |

| Plan Element | Plan Recommendation or Section | Source Type                            | Comment or Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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|              |                                |                                        | <p>RSJ/Institutional racism concerns. (Did not see in Ch.2 Revising the Plan nor in the Appendix.)</p> <ul style="list-style-type: none"> <li>➤ Sections required in the Plan by law might be so-noted, to assist the reader who might wonder at bureaucratise.</li> <li>➤ Plan is organized according to solid waste profession's vernacular, not customers'. Is this necessary to meet legal requirements? If so, perhaps acknowledge as much.</li> <li>➤ Experience tells us customers don't distinguish recycling and waste prevention; our own distinctions aren't totally consistent. Might acknowledge as much, to help a reader who is not in the solid waste biz.</li> <li>➤ Program evaluation didn't seem addressed.</li> <li>➤ The vast majority of the waste stream is coming from commercial, yet the plan is relatively weak in identification of commercial opportunities, yet rather strong on new residential opportunities. Can the reasons for this emphasis be better explained?</li> <li>➤ The key long term strategy of the Plan appears to bans on certain materials from the landfill stream. What other strategies were considered, and how do they compare? Transferring the cost of material removal to the customer is obviously cheaper for the utility and can lower utility costs, but it is always in the best customer interest? Is such a long term policy excellent customer service or something else?</li> <li>➤ Wish the website Table of Contents was "hot" so would take people to sections directly.</li> <li>➤ Wish readers could scroll continuously instead of having to click back and forth to sections.</li> <li>➤ Numbered recommendations in the Matrix of Recommendations should be carried into the chapters so that reader can easily reference text for description/discussion of each recommendation.</li> <li>➤ Readers may take the survey online and think that it's for commenting – what has been the response levels and types of responses.</li> <li>➤ More discussion is needed behind the assumptions about future total generation of solid waste. According to Appendix D, total generation appears to be going down in the past decade, but is forecasted to increase more than 10% in the next 20 years, or approximately 0.5% a year. What are the assumptions driving the decrease and projected increase? It should be noted that SPU customers are being projected to slowly increase the amount of total material generated. While it is great news that an increasing amount of the total generated may be recycled or reused, the fact is that the total generation still needs to be hauled away from customers to some other place. Is the hauling of yard waste, rather than backyard composting, really the most cost effective solution? Does the plan have any element to address the total growing volume of material generated? The plan focus seems to be on reducing waste taken to the landfill, but not reducing the total volume of material generated and hauled. Which of these two would be in the best long term interest of ratepayers?</li> <li>➤ The Plan doesn't mention if other opportunities have been fully explored for cooperation with other utilities in the economies of scale of solid waste management.</li> <li>➤ Have the impacts of the Plan on other SPU funds and programs been considered? For example, is spending a few pennies on water and sewer washing individual cans and bottles to be recycled worth the extra customer cost if the value of the can or bottle is only a fraction of a penny itself in either recycling or garbage? Should these extra hidden customer costs be added into the solid waste analysis, and create a viewpoint from the customer, rather than just reducing SPU disposal costs?</li> </ul> |
| Overall      | Overall                        | Environmental advocacy representatives | <ul style="list-style-type: none"> <li>➤ Please share survey results when you have them.</li> <li>➤ Dollars per ton avoided landfilling - @ \$50/ton.</li> <li>➤ Would like to see GHG analysis on our trains going to Oregon.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

| Plan Element      | Plan Recommendation or Section | Source Type                        | Comment or Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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|                   |                                |                                    | <ul style="list-style-type: none"> <li>➤ Please share the upcoming Life Cycle Analysis report as soon as it is ready.</li> <li>➤ Look at the article The Story of Zero Waste, in Aug 2011 waste industry magazine.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Overall           | Overall                        | Solid waste industry               | <ul style="list-style-type: none"> <li>➤ Compliment the city for its “long view” – making tough policy decisions that result in behavior changes due to pricing drivers, combined with phased-in programs that create community acceptance.</li> <li>➤ The city’s effective planning efforts include: establishing markets and behavior years before implementing materials bans; adding a definition of Beneficial Use; maintaining a commitment to public education and the effective use of social media.</li> <li>➤ City should begin to consistently use life cycle analyses to evaluate programs more broadly. As technology advances, assumptions may change, may be come appropriate to evaluate new goals and policies.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Overall           | Recycling Goal                 | Hospital                           | <ul style="list-style-type: none"> <li>➤ 60% by 2015 is a might aggressive, should go out to 2018. To give a chance to achieve the goal and sustain it.</li> <li>➤ Long-term 70% goal is good, should slide out to 2025.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Overall           | Recycling Goals                | Neighborhood council / association | <ul style="list-style-type: none"> <li>➤ Should go more slowly on the recycling goals, does not agree with the Plan’s aggressive goals. There are costs associated with the goals and the end does not justify higher costs to the people.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Overall           | Recycling Goals                | Neighborhood council / association | <ul style="list-style-type: none"> <li>➤ Supports the goals, and would like a more aggressive timeline. The pace is reasonable for a city like Seattle.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Executive Summary | Various                        | Seattle Public Utilities employee  | <ul style="list-style-type: none"> <li>➤ Various editorial comments: places where text could be clearer, style suggestions., grammar</li> <li>➤ Product Stewardship: Has asset management ever done a cost effectiveness or efficiency analysis on this? The program begs to be “value” tested.</li> <li>➤ Collection: Any study of how cost efficient the garbage/yard waste program is for customers? Is personal financial boondoggle. Would prefer a “pay as you go” system.</li> <li>➤ Transfer: <ul style="list-style-type: none"> <li>• “Why” of transfer facilities not clear in Exec Sumry.</li> <li>• What is demand?</li> <li>• Other alternatives?</li> <li>• Why postponed planning for SRDS redevelopment?</li> <li>• Why not periodic “drives” such as what schools used to do in the 1960’s for newspaper? Or try something other than “in place” stations that people have to drive long distances to?</li> </ul> </li> <li>➤ Organics: Schools should be composting on campus.</li> <li>➤ Why open market recycling and compost processing services for commercial sector?</li> <li>➤ Disposal recommendations: what does “mixed solid waste” mean?</li> <li>➤ Emergency Management: And interim management of hazardous waste?</li> <li>➤ C&amp;D: Hopefully, recommended options will not be heavily dependent on private car trips to five different return locations?</li> <li>➤ Moderate risk waste: <ul style="list-style-type: none"> <li>• consider adding examples of HHW and CESQG.</li> <li>• 3rd bullet p18 – what is “outreach,” education, or pickup, or?</li> </ul> </li> </ul> |

| Plan Element | Plan Recommendation or Section | Source Type                                 | Comment or Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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|              |                                |                                             | <ul style="list-style-type: none"> <li>➤ Admin &amp; Finance <ul style="list-style-type: none"> <li>• Is SPU organization and financial health really stable?</li> <li>• What about customers' ability to afford all these urgent priorities?</li> <li>• How about designing the programs to be more "pay as you throw?" Personally required to pay for more service than is needed.</li> <li>• Education: Where is the voice of the customer? Where is SPU's requirement of staff to educate customers?</li> <li>• Financing: Rates rising is counter-intuitive to less systems costs. Consider providing walk-through of table on p21 re avg customers costs status quo vs recommended scenarios.</li> </ul> </li> <li>➤ Recommendations Matrix: Are these recommendations prioritized?</li> </ul> |
| Chapter 1    | Amendment Process              | Ecology                                     | <ul style="list-style-type: none"> <li>➤ The Plan should discuss how minor changes will be made to the document and define a process to determine if a change to any component of the plan would require falling into an amendment.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Chapter 1    | Revising the Plan              | Seattle Public Utilities staff group        | <ul style="list-style-type: none"> <li>➤ 1-2: How does this Plan serve as a "comprehensive resource document?" Explain the difference from other comp plans.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Chapter 1    | Planning Process               | Seattle Public Utilities employee           | <ul style="list-style-type: none"> <li>➤ Why the break from King County in 1989?</li> <li>➤ Participants &amp; Responsibilities: What is role of General Public? To be informed? To be asked question? To give ideas?</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Chapter 2    | Measurement Data               | Seattle Public Utilities employee           | <ul style="list-style-type: none"> <li>➤ How about a summary of this chapter as a 1<sup>st</sup> section. Otherwise, while very interesting to have as data, don't know what to conclude. How did this data contribute to the development of recommendations?</li> <li>➤ More, please (on employment effects on solid waste)</li> <li>➤ Consider a graph of the data in Table 2-2</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                         |
| Chapter 3    | Green Purchasing               | Solid waste industry                        | <ul style="list-style-type: none"> <li>➤ Applaud city's green purchasing initiatives. Recession has impacted sale of organic soil products. City giving preference to recycled products would help sustainable organics program.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Chapter 3    | Hazardous Waste                | Local Hazardous Waste Plan Administration   | <ul style="list-style-type: none"> <li>➤ Table 3-4, page 3-20. Do the tons of hazardous products "disposed of in 2004" mean disposed of in the garbage (waste composition sort)? Does this include both disposed of in the garbage and collected through LHWMP? It would be helpful to clarify and underlying data source/universe.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Chapter 3    | Product Stewardship            | Neighborhood council / association          | <ul style="list-style-type: none"> <li>➤ Businesses should take on more social responsibility. Does not believe that the taxpayers need to support that. If they pass their costs along to purchasers of their products that is fine, but I don't need to support them via my taxpayer dollars.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Chapter 3    | Product Stewardship            | Product stewardship advocacy representative | <ul style="list-style-type: none"> <li>➤ Need to be careful to note that the NWPSC is a coalition of government organizations in Washington and Oregon that operates as an unincorporated association of members and is comprised of a Steering Committee, Associates and Subcommittees. The NWPSC has no legal structure and cannot support legislation. It drafts policy and supports product stewardship policies and activities. The NWPSC as an entity can't support legislation – individual member agencies support legislation.</li> <li>➤ Other comments and suggested edits in Exec Summary and Chapter 3: <ul style="list-style-type: none"> <li>○ about the NWPSC and their accomplishments.</li> </ul> </li> </ul>                                                                      |

| Plan Element | Plan Recommendation or Section | Source Type                          | Comment or Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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|              |                                |                                      | <ul style="list-style-type: none"> <li>○ Section 3.3.4: Edit to accurately reflect membership; text edits to accurately represent support for legislation; edit to accurately reflect NWPSC role in creation of E-Cycle Washington; and other small edits to more accurately portray NWPSC and member roles.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Chapter 3    | Product Stewardship            | Neighborhood council / association   | <ul style="list-style-type: none"> <li>➤ Agrees producers and retailer should do more to reduce toxics in their products and make their products more recyclable, and they should pay for managing their products at their end of life. OK to pass the cost on to the consumer.</li> <li>➤ Product packaging should be recyclable, period.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Chapter 3    | Product Stewardship            | Hospital                             | <ul style="list-style-type: none"> <li>➤ The idea of producers of products having responsibility for end of life recycling is something that must be expanded. It should be a cost that is part of the purchase price and infrastructure needs to be provided to make this as easy as possible for the consumer to follow.</li> <li>➤ Packaging of product by producers must be included in this paradigm change.</li> <li>➤ Timing of changes should be more aggressive. Giving more time only allows those who wish to derail or delay progress an advantage.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Chapter 3    | Product Stewardship            | Seattle Public Utilities staff group | <ul style="list-style-type: none"> <li>➤ Product stewardship is defined as end-of-life in the section where it's introduced. Missing life-cycle impacts, design-for-environment/recycling and toxics reduction.</li> <li>➤ Product stewardship is defined/explained differently in different sections. Prefer consistency. Exec Summary p.6, p3-6, pA-3.</li> <li>➤ Whole section on fees and who pays doesn't apply solely to PS but rather to Financing for solid waste.</li> <li>➤ Believe our preferred language and approach is cost internalization by producers and definitely not fees. Recovery fees are not product stewardship anyway.</li> <li>➤ Producer responsibility is not generally a mechanism for generating revenue to a government agency; is a means for moving costs to users through cost of products.</li> </ul>                                                                                                                                                                                                                                                                                                    |
| Chapter 3    | Product Stewardship            | Solid waste industry                 | <ul style="list-style-type: none"> <li>➤ Support the plan's policy focusing on problem products.</li> <li>➤ Re materials common in curbside collection programs: <ul style="list-style-type: none"> <li>• Does product stewardship legislation for curbside materials (like packaging) offer an improved or just different system?</li> <li>• Does current "pay as you throw" rate structure, with bans and public education, accomplish the same goal that producer responsibility programs might emulate in communities where solid waste fees are included in taxes?</li> <li>• Does product stewardship allow for sufficient continued municipal control over quality of services, public education, public safety, environmental controls and program quality?</li> <li>• Expanding the producer pay concept of product stewardship to curbside materials may result in unintended consequences that may result in added administrative costs and program quality degradation.</li> <li>• Commenter sees clear distinction between efforts where product stewardship makes sense and where it does not add value.</li> </ul> </li> </ul> |
| Chapter 3    | Waste Prevention               | Housing Alliance                     | <ul style="list-style-type: none"> <li>➤ SPU and partners are on the right track.</li> <li>➤ Re schools, introducing behavioral change with children, schools starting to compost and think about their food waste: If children start to change their behaviors to reducing waste at an earlier age, hopefully it will permeate with them throughout their adult life.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |



| Plan Element | Plan Recommendation or Section           | Source Type                            | Comment or Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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|              |                                          |                                        | <ul style="list-style-type: none"> <li>➤ Adults – Images brought closer to home could be impactful. Most of don't see the images of the mounds of waste.</li> <li>➤ Maybe local demonstrations of what a street/block throws away or could reuse through recycling or composting.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Chapter 3    | Waste Prevention                         | Environmental non-profit               | <ul style="list-style-type: none"> <li>➤ Strongly support continuing to promote backyard composting and grass cycling as “onsite organics” measures to prevent waste from entering the organics stream.</li> <li>➤ Look for options to collaborate with the Seattle Conservation Corps through coupons in ratepayer newsletters, local papers, etc, with recent expiration of Green Cones subsidy and Seattle Composters (low cost residential composting tools). Similar successful efforts with Cedar Grove during “Compost Days” can be used as a model.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Chapter 3    | Waste Prevention                         | Seattle Public Utilities staff group   | <ul style="list-style-type: none"> <li>➤ Like that waste prevention is a large section and comes first.</li> <li>➤ Waste prevention recommendations in the chapter don't line up well with the numbered recommendations in the Matrix of Recommendations.</li> <li>➤ Recommendations in the waste prevention chapter need to follow a consistent format. The product stewardship recommendations are split into two parts (3-28). It's not clean in the narrative that the second part (bullets beginning with “continue working with NWPSC...” are also recommendations, but they are included in the numbered Matrix.</li> <li>➤ Wish waste prevention would be evident and integrated into the programs/business areas described in other chapters, too. Reduce-reuse-recycle hierarchy is not evident.</li> <li>➤ Source reduction seems left out of waste prevention.</li> <li>➤ 3-11: “SPU stopped selling discounted compost bins in the summer of 2011.” Should we call attention to this fact?</li> <li>➤ 3-11: Bin discounts were not supported by LHWMP.</li> <li>➤ 3-12: Backyard yard waste decreased by percentages given. Backyard food waste composting was at lower percentages (2000 31%, 2005 26%, 2010 20%).</li> <li>➤ 3-21: Fix typo in first sentence of “Green Purchasing” – delete “purchases” at end.</li> <li>➤ 3-22: In 2010 we had a combined budget of \$100k for maintaining schools recycling program momentum (\$20k) and food recovery (\$80k). We spent only \$55k of the \$80k on food recovery.</li> <li>➤ 3-25: Should we mention we ended subsidized compost bin sales in 2011? 95,550 compost bins were sold during 23 years of sales (1989-2011).</li> <li>➤ 3-25: Continue promoting or offering grants to support retail and restaurant donations to food banks and feeding programs.</li> </ul> |
| Chapter 3    | Waste Prevention and Product Stewardship | Environmental advocacy representatives | <ul style="list-style-type: none"> <li>➤ SPU should do more for innovation, more planning around prevention. Should have dedicated, focused resources, be more creative. For example transport packaging reduction. Should hire an innovator.</li> <li>➤ Working with the NWPSC and “passing legislation” – Look at editing the text to more accurately reflect policy development.</li> <li>➤ Page 3-21 re E-cycle Washington. Correct the date. Legislation passed 2007, program started 2009. Is discussion about Seattle as a “collector” clear?</li> <li>➤ Waste prevention goals – Should have a total generation reduction goal, like King County. Per capita.</li> <li>➤ Fee discussion in text is confusing. Should reconcile terminology with WA and CA discussion.</li> <li>➤ Should have eventual goal to be state framework legislation.</li> <li>➤ Product by product list should be amendable/flexible. <ul style="list-style-type: none"> <li>○ Carpet – should make more obvious is a product stewardship solution.</li> <li>○ Mattresses – consider adding</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

| Plan Element | Plan Recommendation or Section                    | Source Type          | Comment or Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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|              |                                                   |                      | <ul style="list-style-type: none"> <li>○ Batteries</li> <li>○ Mercury thermostats</li> <li>○ Kids' car seats</li> <li>➤ Should have cooperative conversations with retailers about products, packaging, way upstream.</li> <li>➤ Should add the job creation argument, as in the business case for product stewardship done by the NWPSC.</li> <li>➤ Batteries on the table p3-20 in WP chapter – Look at where is indicates “no action.” Make sure what’s said there isn’t limiting.</li> <li>➤ WP 4, WP5 donations of electronics – Avoid unintended dumping on non-profits.</li> <li>➤ WP25 product solutions for materials in curbside recycling – Should make stronger.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Chapter 3    | Waste Prevention, Product Stewardship, Green Jobs | Business             | <ul style="list-style-type: none"> <li>➤ Most of chapter great. City has done and is planning lots of innovative stuff on waste prevention (reduction and reuse). Unwanted [yellow pages] phone book opt out ordinance is impressive waste prevention achievement.</li> <li>➤ Would like to see more concrete recommendation about waste prevention public education, more media outreach or social media. Reduction and reuse are harder to explain and understand than recycling. Should add 0.5 or 0.25 FTE dedicated to waste prevention public education.</li> <li>➤ At least a third of this chapter deals more with recycling than waste prevention. State electronics product stewardship law mostly about recycling. New restaurant regs about take-out packaging largely about recycling and composting, banning polystyrene take-out packaging could be considered toxics waste prevention.</li> <li>➤ Product stewardship shouldn't be lumped with waste prevention unless is concerted effort to emphasize reduction and reuse. Phone books and junk mail opt-out ordinances great because all about reduction rather than recycling.</li> <li>➤ Reuse aspect of state electronics product stewardship take-back law needs to be emphasized. How about a recommendation that SPU directly support any organization that is part of the E-Cycle Washington program that primarily deals with electronics reuse? Reuse helps green jobs.</li> <li>➤ Carpet – more could be done on waste prevention as well as product stewardship and recycling. City could encourage carpet uses that generate less waste, like carpet tiles, carpet tile refurbishment and reuse programs.</li> <li>➤ Green jobs should be emphasized more.</li> <li>➤ Page 3-8 Targeted fees: some sections talk about types of material best covered by this fee, all fees should have similar analysis. CRF-immature/non-existent/struggling market recyclable items including plastic bottles and glass. Business Retained-plastic bag fee (use to give out reusable bags, pallet recycle fees, etc. PRF-glass, pesticide containers, cleaning supplies in plastic, toxic products like CFLs. PTBS-electronic gadgets/batteries.</li> <li>➤ Page 3-10 Describe how “other” is a major waste prevention category. Use misc small programs including some reference to what they recycle.</li> <li>➤ Page 3-20 In the table – is MTBE still an issue? It isn't in gas anymore and has degenerated into a ground water pollution problem that has left reuse arena.</li> <li>➤ Page 3-28 Refer to table on page 20 as it clearly states which products will require legislation.</li> <li>➤ Page 3-30 Measurement of industrial materials recycled. Look to IMEX in King County.</li> </ul> |
| Chapter 4    | Collection - Hazardous Waste                      | Apartment Management | <ul style="list-style-type: none"> <li>➤ Concerned that with compact fluorescent bulbs that contain mercury becoming mandatory, there is no plan to collect these, batteries, and other toxic materials separately. Sees batteries, TVs, computers, and fluorescent bulbs in apartment trash. Has not heard of anyone using [household hazardous waste] drop-off station. Companies producing electronics, CFLs, and batteries should invest, be liable for the harm their products cause after they go in the trash.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

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| Chapter 4    | Designation of Recyclables             | Ecology                              | <ul style="list-style-type: none"> <li>➤ Further clarify the criteria used for developing Seattle’s list of materials that will be collected for recycling. Must notify Ecology when changes adopted. Please note this in the Plan.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Chapter 4    | Emergency Management                   | Environmental non-profit             | <ul style="list-style-type: none"> <li>➤ The DRAFT COOP should be completed earlier than 2015 if possible.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Chapter 4    | Emerging Technologies                  | Solid waste industry                 | <ul style="list-style-type: none"> <li>➤ Re Emerging Technologies-Recycling: Supports operating a “Dirty” MRF as a pilot program to test alternatives for increasing the city’s diversion rate. Possible language could be “SPU may explore the option of using a “dirty” Materials Recovery Facility (MRF) to further increase diversion rates. A “dirty” MFRF is a facility that separates a mixed solid waste stream into recyclable, compostable, and garbage. Similar technology around the country has been successful at significantly increasing recycling and compostable rates.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Chapter 4    | Emerging Technologies                  | Solid waste industry                 | <ul style="list-style-type: none"> <li>➤ Emerging technologies may offer cost effective, environmentally acceptable, and locally based solutions for hard to recycle materials.</li> <li>➤ Correct definitions should be used to distinguish technologies. “Conversion technologies” have evolved from burn barrels to a range of technologies (gasification, hydrolysis, anaerobic digestion, pyrolysis, chemical feedstock recovery) that can treat a variety of materials. Pyrolysis and gasification are not incineration. Seattle should recognize the differences and advancements in technologies and create definitions that clearly allow and encourage emerging technologies and ultimate use of separated materials in lieu of disposal – energy, fuel and new products – complementing Seattle’s broader sustainability goals.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Chapter 4    | Facilities                             | Neighborhood council / association   | <ul style="list-style-type: none"> <li>➤ Improve the Plan’s consideration of the consistency of the city’s solid waste facilities with the city’s comprehensive plan and the surrounding neighborhoods. <i>[editor’s note – assume writer refers to city’s comprehensive growth management plan]</i> The draft plan does not contain any consideration of facility siting, the consistency of the new North Transfer Station (and other facilities) with the surrounding neighborhoods, or the impacts of the city’s facilities on land use and development patterns. It is imperative that the city not repeat the process that led to the rebuild of the current North Transfer Station facility without the slightest consideration of the appropriateness of the site.</li> <li>➤ Siting issues should be addressed consistent with RCW 70.95 and Washington Department of Ecology, Guidelines for Development of Local Comprehensive Solid Waste Management Plans and Plan Revisions, February 2010, Publication No. 10-07-005, p35.</li> <li>➤ SPU’s 1998 plan did not “contemplate” anything approaching the current reconstruction of the transfer station; legally required consideration of the city’s solid waste facility siting has never happened; and, the only “approval” of the current rebuild project is this paragraph in Ordinance 122447 (July 2007): “WHEREAS, the Council and Executive have reached an agreement on a configuration that rebuilds the North and South Transfer Stations...”</li> <li>➤ Redo the draft solid waste plan to add an appropriate siting analysis for all of its solid waste facilities.</li> </ul> |
| Chapter 4    | Monitoring and Performance Measurement | Seattle Public Utilities staff group | <ul style="list-style-type: none"> <li>➤ Page 4-19, Table 4-3: 2007 residential survey garbage pickup score repeated.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Chapter 4    | Organics Management                    | Solid waste industry                 | <ul style="list-style-type: none"> <li>➤ Page 4-51 Incorrect statement. Current organics processing contract includes food soiled paper but does not include “other compostable packaging.” Including such compostable packaging as a contractual obligation would require a contract amendment.</li> <li>➤ Concerned about compostable packaging and growing contamination in the residential and commercial volumes. Suggest slowing down integration of Multifamily organics diversion until contamination issue more fully addressed. Is for</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

| Plan Element | Plan Recommendation or Section | Source Type                            | Comment or Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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|              |                                |                                        | <p>compostable packaging, but concerned whether packaging chosen without guidelines is really compostable.</p> <ul style="list-style-type: none"> <li>➤ Commercial organics collection – concerned City incentivizing organics collection creating collection subsidies for customer and ability of private collectors to compete for collection service. For example City’s rate for 2/96 gallon totes for commercial organics collection once a week for \$8.00, picked up by residential collectors. Was originally intended as “safety net” for small commercial generators in residential areas, but now being used citywide. Private collector cannot compete at this price. Suggest returning practice to safety net only. Appreciate cost of service detachable container rates that enables open market service.</li> </ul>                                                                                                                                                                                                                                                                                                             |
| Chapter 4    | Organics Management            | Ecology                                | <ul style="list-style-type: none"> <li>➤ Recommendations in section 3.4.2, backyard composting, edible food recovery, and food waste reduction through efficient food purchasing preparation demonstrate progressive leadership.</li> <li>➤ Goals for increased diversion must run parallel to goals for increased infrastructure and markets to process and use the additional materials. Increasing collection at schools and restaurants will result in increased volumes of feedstocks going to compost facilities that are already at, or close to capacity.</li> <li>➤ Consider expanding capacity and contamination discussion in the Plan. <ul style="list-style-type: none"> <li>• Capacity – Increase organic materials processing by supporting infrastructure development for composting, anaerobic digestion and other technologies.</li> <li>• Markets – Commit to compost market development through internal purchasing programs and promoting general consumer use.</li> <li>• Contamination – Help protect compost quality through increased education to generators and communication with processors.</li> </ul> </li> </ul> |
| Chapter 4    | Organics Management            | Environmental non-profit               | <ul style="list-style-type: none"> <li>➤ Supports city encouraging composting capacity including anaerobic digestion, and encouraging backyard composting. With more food waste entering organics stream, digestion process offers greater efficiency without any real material or volume lost.</li> <li>➤ Continuing to promote backyard composting is most climate friendly way of recycling organics (less fuel and energy costs, small piles don’t offgas as much CO2 as large piles, and keeps composting in the public eye, making the compost process tangible. Best kind of community marketing.</li> <li>➤ Labeling and food packaging: Strongly encourage working towards changes in ways that promote composting and reduce contamination. The fight must be continued and intensified as customer confusion will only increase as labeling and materials discrepancies continue to exist.</li> </ul>                                                                                                                                                                                                                                 |
| Chapter 4    | Processing and Disposal        | Seattle Public Utilities employee      | <ul style="list-style-type: none"> <li>➤ Why is there no trash to energy plan?</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Chapter 4    | Processing and Disposal        | Environmental advocacy representatives | <p><i>Editor’s note: PD# refers to Plan recommendations as numbered in the recommendations matrix that follows the Executive Summary.</i></p> <ul style="list-style-type: none"> <li>➤ PD1 – Continuing recycling processing contracting. Some areas have had problems with co-mingled recycling, such as higher residuals, processing problems from plastic bags and glass, as well as downstream problems. Consider doing an analysis.</li> <li>➤ PD1 &amp; 2 (open market processing for privately collected commercial recyclables) – Producer financing would force efficiencies, quality, financial incentives. Like in Ontario, Toronto blue box financing.</li> <li>➤ PD9 – Keep no burning. Incineration in Europe is very different – they actually have to bring in natural gas to burn.</li> <li>➤ Cedar Grove odor problems: will urge city council to hold briefing in context of organics processing RFP.</li> </ul>                                                                                                                                                                                                              |

| Plan Element                                                                               | Plan Recommendation or Section               | Source Type                                   | Comment or Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
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| Chapter 4                                                                                  | Recycling                                    | Seattle Public Utilities employee and citizen | ➤ It would be a good idea to add recycling containers at gas stations for people who clean out their cars when getting gas.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| Chapter 4                                                                                  | Recycling                                    | Seattle Public Utilities employee and citizen | ➤ Consider a pilot program where people purchase a sturdy non-toxic plastic, refillable drinking container with logo promoting Seattle water. People could refill their containers for a small fee from dispensing machines throughout the city, or buy said container from same machine. To raise awareness and encourage green habits. Could perhaps find grant money to fund development of the machines. Could recoup costs by selling to other cities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| Chapter 4                                                                                  | Recycling Recommendation – MSW C&D materials | Transfer Station Survey                       | <table border="1"> <thead> <tr> <th colspan="3">5. Construction and demolition debris drop-off in separate area of station: how supportive</th> </tr> <tr> <th>Answer Options</th> <th>Response Count</th> <th>Response Percent</th> </tr> </thead> <tbody> <tr><td>1 Least supportive</td><td>4</td><td>4%</td></tr> <tr><td>2</td><td>0</td><td>0%</td></tr> <tr><td>3</td><td>0</td><td>0%</td></tr> <tr><td>4</td><td>6</td><td>6%</td></tr> <tr><td>5</td><td>13</td><td>13%</td></tr> <tr><td>6</td><td>7</td><td>7%</td></tr> <tr><td>7 Most Supportive</td><td>68</td><td>69%</td></tr> <tr><td>no answer</td><td>1</td><td>1%</td></tr> <tr><td><b>Total Count</b></td><td><b>99</b></td><td></td></tr> </tbody> </table><br><table border="1"> <thead> <tr> <th colspan="3">6a. Ban asphalt paving disposal in garbage: how supportive</th> </tr> <tr> <th>Answer Options</th> <th>Response Count</th> <th>Response Percent</th> </tr> </thead> <tbody> <tr><td>1 Least supportive</td><td>6</td><td>6%</td></tr> <tr><td>2</td><td>2</td><td>2%</td></tr> <tr><td>3</td><td>1</td><td>1%</td></tr> <tr><td>4</td><td>8</td><td>8%</td></tr> <tr><td>5</td><td>6</td><td>6%</td></tr> <tr><td>6</td><td>7</td><td>7%</td></tr> <tr><td>7 Most Supportive</td><td>68</td><td>69%</td></tr> <tr><td>no answer</td><td>1</td><td>1%</td></tr> <tr><td><b>Total Count</b></td><td><b>99</b></td><td></td></tr> </tbody> </table><br><table border="1"> <thead> <tr> <th colspan="3">6b. Ban asphalt shingles disposal in garbage: how supportive</th> </tr> <tr> <th>Answer Options</th> <th>Response Count</th> <th>Response Percent</th> </tr> </thead> <tbody> <tr><td>1 Least supportive</td><td>7</td><td>7%</td></tr> <tr><td>2</td><td>2</td><td>2%</td></tr> <tr><td>3</td><td>3</td><td>3%</td></tr> <tr><td>4</td><td>10</td><td>10%</td></tr> <tr><td>5</td><td>8</td><td>8%</td></tr> </tbody> </table> | 5. Construction and demolition debris drop-off in separate area of station: how supportive |  |  | Answer Options | Response Count | Response Percent | 1 Least supportive | 4 | 4% | 2 | 0 | 0% | 3 | 0 | 0% | 4 | 6 | 6% | 5 | 13 | 13% | 6 | 7 | 7% | 7 Most Supportive | 68 | 69% | no answer | 1 | 1% | <b>Total Count</b> | <b>99</b> |  | 6a. Ban asphalt paving disposal in garbage: how supportive |  |  | Answer Options | Response Count | Response Percent | 1 Least supportive | 6 | 6% | 2 | 2 | 2% | 3 | 1 | 1% | 4 | 8 | 8% | 5 | 6 | 6% | 6 | 7 | 7% | 7 Most Supportive | 68 | 69% | no answer | 1 | 1% | <b>Total Count</b> | <b>99</b> |  | 6b. Ban asphalt shingles disposal in garbage: how supportive |  |  | Answer Options | Response Count | Response Percent | 1 Least supportive | 7 | 7% | 2 | 2 | 2% | 3 | 3 | 3% | 4 | 10 | 10% | 5 | 8 | 8% |
| 5. Construction and demolition debris drop-off in separate area of station: how supportive |                                              |                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
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| 1 Least supportive                                                                         | 4                                            | 4%                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
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| 4                                                                                          | 6                                            | 6%                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| 5                                                                                          | 13                                           | 13%                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| 6                                                                                          | 7                                            | 7%                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| 7 Most Supportive                                                                          | 68                                           | 69%                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| no answer                                                                                  | 1                                            | 1%                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| <b>Total Count</b>                                                                         | <b>99</b>                                    |                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| 6a. Ban asphalt paving disposal in garbage: how supportive                                 |                                              |                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| Answer Options                                                                             | Response Count                               | Response Percent                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| 1 Least supportive                                                                         | 6                                            | 6%                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| 2                                                                                          | 2                                            | 2%                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| 3                                                                                          | 1                                            | 1%                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| 4                                                                                          | 8                                            | 8%                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| 5                                                                                          | 6                                            | 6%                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| 6                                                                                          | 7                                            | 7%                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| 7 Most Supportive                                                                          | 68                                           | 69%                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| no answer                                                                                  | 1                                            | 1%                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| <b>Total Count</b>                                                                         | <b>99</b>                                    |                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| 6b. Ban asphalt shingles disposal in garbage: how supportive                               |                                              |                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| Answer Options                                                                             | Response Count                               | Response Percent                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| 1 Least supportive                                                                         | 7                                            | 7%                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| 2                                                                                          | 2                                            | 2%                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| 3                                                                                          | 3                                            | 3%                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| 4                                                                                          | 10                                           | 10%                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |
| 5                                                                                          | 8                                            | 8%                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                              |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |    |     |   |   |    |

| Plan Element                                             | Plan Recommendation or Section                | Source Type               | Comment or Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
|----------------------------------------------------------|-----------------------------------------------|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|---|----|-------------------|----------------|------------------|--------------------|---|----|--------------------|-----------|----|--------------------------------------------------------|---|----|----------------|----------------|------------------|--------------------|----|-----|---|---|----|-------------------|----|-----|-----------|---|----|--------------------|-----------|-----|---|---|----|-------------------|----|-----|-----------|---|----|--------------------|-----------|--|----------------------------------------------------------|--|--|----------------|----------------|------------------|--------------------|---|----|---|---|----|---|---|----|---|---|----|---|----|-----|---|---|----|-------------------|----|-----|-----------|---|----|--------------------|-----------|--|
|                                                          |                                               |                           | <table border="1"> <tr> <td>6</td> <td>5</td> <td>5%</td> </tr> <tr> <td>7 Most Supportive</td> <td>62</td> <td>63%</td> </tr> <tr> <td>no answer</td> <td>2</td> <td>2%</td> </tr> <tr> <td><b>Total Count</b></td> <td><b>99</b></td> <td></td> </tr> </table><br><table border="1"> <tr> <th colspan="3">6c. Ban clean wood disposal in garbage: how supportive</th> </tr> <tr> <th>Answer Options</th> <th>Response Count</th> <th>Response Percent</th> </tr> <tr> <td>1 Least supportive</td> <td>12</td> <td>12%</td> </tr> <tr> <td>2</td> <td>3</td> <td>3%</td> </tr> <tr> <td>3</td> <td>2</td> <td>2%</td> </tr> <tr> <td>4</td> <td>2</td> <td>2%</td> </tr> <tr> <td>5</td> <td>14</td> <td>14%</td> </tr> <tr> <td>6</td> <td>6</td> <td>6%</td> </tr> <tr> <td>7 Most Supportive</td> <td>54</td> <td>55%</td> </tr> <tr> <td>no answer</td> <td>6</td> <td>6%</td> </tr> <tr> <td><b>Total Count</b></td> <td><b>99</b></td> <td></td> </tr> </table><br><table border="1"> <tr> <th colspan="3">6d. Ban plastic film disposal in garbage: how supportive</th> </tr> <tr> <th>Answer Options</th> <th>Response Count</th> <th>Response Percent</th> </tr> <tr> <td>1 Least supportive</td> <td>9</td> <td>9%</td> </tr> <tr> <td>2</td> <td>3</td> <td>3%</td> </tr> <tr> <td>3</td> <td>6</td> <td>6%</td> </tr> <tr> <td>4</td> <td>4</td> <td>4%</td> </tr> <tr> <td>5</td> <td>12</td> <td>12%</td> </tr> <tr> <td>6</td> <td>4</td> <td>4%</td> </tr> <tr> <td>7 Most Supportive</td> <td>58</td> <td>59%</td> </tr> <tr> <td>no answer</td> <td>3</td> <td>3%</td> </tr> <tr> <td><b>Total Count</b></td> <td><b>99</b></td> <td></td> </tr> </table> | 6                                                   | 5 | 5% | 7 Most Supportive | 62             | 63%              | no answer          | 2 | 2% | <b>Total Count</b> | <b>99</b> |    | 6c. Ban clean wood disposal in garbage: how supportive |   |    | Answer Options | Response Count | Response Percent | 1 Least supportive | 12 | 12% | 2 | 3 | 3% | 3                 | 2  | 2%  | 4         | 2 | 2% | 5                  | 14        | 14% | 6 | 6 | 6% | 7 Most Supportive | 54 | 55% | no answer | 6 | 6% | <b>Total Count</b> | <b>99</b> |  | 6d. Ban plastic film disposal in garbage: how supportive |  |  | Answer Options | Response Count | Response Percent | 1 Least supportive | 9 | 9% | 2 | 3 | 3% | 3 | 6 | 6% | 4 | 4 | 4% | 5 | 12 | 12% | 6 | 4 | 4% | 7 Most Supportive | 58 | 59% | no answer | 3 | 3% | <b>Total Count</b> | <b>99</b> |  |
| 6                                                        | 5                                             | 5%                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 7 Most Supportive                                        | 62                                            | 63%                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| no answer                                                | 2                                             | 2%                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| <b>Total Count</b>                                       | <b>99</b>                                     |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 6c. Ban clean wood disposal in garbage: how supportive   |                                               |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| Answer Options                                           | Response Count                                | Response Percent          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 1 Least supportive                                       | 12                                            | 12%                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 2                                                        | 3                                             | 3%                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 3                                                        | 2                                             | 2%                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 4                                                        | 2                                             | 2%                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 5                                                        | 14                                            | 14%                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 6                                                        | 6                                             | 6%                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 7 Most Supportive                                        | 54                                            | 55%                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| no answer                                                | 6                                             | 6%                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| <b>Total Count</b>                                       | <b>99</b>                                     |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 6d. Ban plastic film disposal in garbage: how supportive |                                               |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| Answer Options                                           | Response Count                                | Response Percent          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 1 Least supportive                                       | 9                                             | 9%                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 2                                                        | 3                                             | 3%                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 3                                                        | 6                                             | 6%                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 4                                                        | 4                                             | 4%                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 5                                                        | 12                                            | 12%                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 6                                                        | 4                                             | 4%                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 7 Most Supportive                                        | 58                                            | 59%                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| no answer                                                | 3                                             | 3%                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| <b>Total Count</b>                                       | <b>99</b>                                     |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| Chapter 4                                                | Recycling Recommendation – Recycling drop off | Transfer Station Survey   | <table border="1"> <tr> <th colspan="3">7. Recycling drop-off before scales: how supportive</th> </tr> <tr> <th>Answer Options</th> <th>Response Count</th> <th>Response Percent</th> </tr> <tr> <td>1 Least supportive</td> <td>0</td> <td>0%</td> </tr> <tr> <td>2</td> <td>0</td> <td>0%</td> </tr> <tr> <td>3</td> <td>2</td> <td>2%</td> </tr> <tr> <td>4</td> <td>1</td> <td>1%</td> </tr> <tr> <td>5</td> <td>1</td> <td>1%</td> </tr> <tr> <td>6</td> <td>5</td> <td>5%</td> </tr> <tr> <td>7 Most Supportive</td> <td>87</td> <td>88%</td> </tr> <tr> <td>no answer</td> <td>3</td> <td>3%</td> </tr> <tr> <td><b>Total Count</b></td> <td><b>99</b></td> <td></td> </tr> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 7. Recycling drop-off before scales: how supportive |   |    | Answer Options    | Response Count | Response Percent | 1 Least supportive | 0 | 0% | 2                  | 0         | 0% | 3                                                      | 2 | 2% | 4              | 1              | 1%               | 5                  | 1  | 1%  | 6 | 5 | 5% | 7 Most Supportive | 87 | 88% | no answer | 3 | 3% | <b>Total Count</b> | <b>99</b> |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
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| Answer Options                                           | Response Count                                | Response Percent          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 1 Least supportive                                       | 0                                             | 0%                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 2                                                        | 0                                             | 0%                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 3                                                        | 2                                             | 2%                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 4                                                        | 1                                             | 1%                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 5                                                        | 1                                             | 1%                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 6                                                        | 5                                             | 5%                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 7 Most Supportive                                        | 87                                            | 88%                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| no answer                                                | 3                                             | 3%                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| <b>Total Count</b>                                       | <b>99</b>                                     |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |
| Chapter 4                                                | Recycling Recommendations                     | Local Chamber of Commerce | <ul style="list-style-type: none"> <li>➤ Great price sensitivity, very concerned about increasing personal costs.</li> <li>➤ Generally supportive of recycling and environmentalism</li> <li>➤ Most of the group's questions and concerns were about residential service. Fair amount of unfamiliarity with services and Seattle's solid waste system in general.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                     |   |    |                   |                |                  |                    |   |    |                    |           |    |                                                        |   |    |                |                |                  |                    |    |     |   |   |    |                   |    |     |           |   |    |                    |           |     |   |   |    |                   |    |     |           |   |    |                    |           |  |                                                          |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |    |     |   |   |    |                   |    |     |           |   |    |                    |           |  |

| Plan Element | Plan Recommendation or Section | Source Type                        | Comment or Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| Chapter 4    | Recycling Recommendations      | Higher education                   | <p>Commercial recycling recommendations</p> <ul style="list-style-type: none"> <li>➤ Many of the proposed initiatives will be easy to meet if we don't already.</li> <li>➤ The most challenging effort, to ban organics in 2016, should be easier to achieve given the time to improve our current system.</li> <li>➤ Furniture waste is unaddressed. After eliminating recyclables, C&amp;D, and organics, furniture would be our largest stream of material not diverted. Before any regulatory measures, proper dialogue should be started within the furniture manufacturing industry to "design for disassembly." Furniture should be easily and quickly disassembled into recyclable materials (fabric, wood, metals, cushioning specifically for reuse if we ever going to expect furniture to be recycled. The city could support commercial customers by advocating for such disassembly standards for manufacturers just like LEED has done for green building and Green Seal has done.</li> </ul>                                                                      |
| Chapter 4    | Recycling Recommendations      | Neighborhood council / association | <ul style="list-style-type: none"> <li>➤ Any changes should be put on the back burner until the city can find ways to reduce costs to the residents instead of increasing costs.</li> <li>➤ Increased Inspections: Does not support inspectors increasing how much they look in garbage containers for materials not allowed. The city goes way too far in how "big-brotherish" they are about garbage.</li> <li>➤ I pay more for my garbage pick up than anyone else I know from other parts of the country. And now you want to force me to put out less garbage and you want to reduce my garbage pick up by 50% and then you want to increase the costs to me even more? That is crazy!!! I do not support your plan. This is a total rip-off!!! If you want to decrease garbage, then figure out a way to decrease your costs in proportion to the decreased garbage. Until you can figure that out, this plan needs to be put on the back burner.</li> </ul>                                                                                                                |
| Chapter 4    | Recycling Recommendations      | Local ethnic coalition             | <ul style="list-style-type: none"> <li>➤ Practices and attitudes toward recycling/composting differ between countries, with those attitudes and practices carried over here. Family member is from Holland where individuals not expected to recycle, only the government. While was in Lebanon, people often burned their garbage, or in rural areas goats ate it. Recycling outside the city didn't seem to exist.</li> <li>➤ Should promote how people can save money by recycling and composting.</li> <li>➤ Should advertise more that people can have extra recycling, an extra recycling bin, and weekly recycling pick up.</li> <li>➤ Diapers and EOW: Many with babies will require larger garbage cans if picking up garbage goes to every other week. Many Arabs have larger families. Cloth diapers are not an option for many people and compostable diapers are expensive.</li> <li>➤ Is full supporter of recycling, composting and reducing landfill, but is concerned about people being heavily penalized due to reasons like in the diaper example.</li> </ul> |
| Chapter 4    | Recycling Recommendations      | Neighborhood council / association | <p>Commercial Recycling</p> <ul style="list-style-type: none"> <li>➤ Should use more carrot, less stick.</li> <li>➤ Should increase the economic incentives to recycle by making it free or lower cost, and increasing cost of garbage collection. Instead of bans.</li> <li>➤ Website information is difficult to navigate to find current food composting regulations.</li> <li>➤ Particularly for events. Difficult to find recycling and composting dumpsters and they cost twice what garbage dumpsters cost. "Cleanscapes is expensive." [SPU staff followed up with info on pricing – recycling dumpsters are less expensive than garbage dumpsters of equal size.]</li> <li>➤ Bans on recyclables in the garbage would be hard to enforce. Don't like the idea of "garbage police."</li> <li>➤ Ban on pet waste in the garbage could be piloted by Seattle Animal Shelter.</li> <li>➤ Where does funding come from to implement the recommendations? How much will the programs cost?</li> </ul>                                                                          |

| Plan Element | Plan Recommendation or Section | Source Type                        | Comment or Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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| Chapter 4    | Recycling Recommendations      | Housing Alliance                   | <ul style="list-style-type: none"> <li>➤ Are chopsticks compostable? Was told “no” when called SPU, even the bamboo ones.</li> <li>➤ Wendy’s restaurants are dumping compost in garbage.</li> <li>➤ Recycling goals – 100% of attendees support the new overall goals.</li> <li>➤ Food composting – Half or more of attendees think they can be putting all their food waste into a green cart by 2015.</li> <li>➤ There should be a penalty for not composting food waste.</li> <li>➤ About 2/3’s of attendees said they had green carts at their building at that time.</li> <li>➤ Organics ban, multi family and commercial. Consider offering a workshop for building managers via the Chinatown-International District Business Improvement Association to help them adapt to the organics ban. Issues revolve around not enough space for organics containers, but building managers seemed to think the container would be bigger than actual.</li> </ul>                                                                                                                                                                                                                                                                                              |
| Chapter 4    | Recycling Recommendations      | Neighborhood council / association | <ul style="list-style-type: none"> <li>➤ Transfer stations – Seattle could build a separate station to collect C&amp;D materials.</li> <li>➤ Every other week single family garbage collection – 10 of 24 voted in favor of the recommendation.</li> <li>➤ Multi family recycling rate – why isn’t it higher? (Little yard waste and need more participation for food waste composting)</li> <li>➤ Businesses required to recycle bottles and cans – 22 of 24 voted in favor of this recommendations. Should set up recycling at gas stations for people cleaning out cars.</li> <li>➤ Should be more recycling in parks and other public places.</li> <li>➤ Ban food (organics) from garbage – 13 of 24 voted in favor.</li> <li>➤ Proposed that people with “canopy trees” be given a discount on yard waste collection. Disposing of yard waste is challenging if you have large trees on your property.</li> <li>➤ Pet waste &amp; diapers diversion – 12 of 24 voted in favor.</li> <li>➤ Other ideas included banning Styrofoam packing peanuts; providing document shredding service at transfer stations to encourage more paper recycling; finding ways to help older adults get their containers to the curb; \$30 dump fee is not fair.</li> </ul> |
| Chapter 4    | Recycling Recommendations      | Neighborhood council / association | <ul style="list-style-type: none"> <li>➤ Every other week single family garbage collection – 15 out of 24 votes in favor of this recommendation.</li> <li>➤ Businesses required to recycle bottles and cans – 18 out of 24 votes in favor of this recommendation</li> <li>➤ Banning food waste from garbage. Council members had questions about efficient composting, what is compostable, and how SPU is conducting outreach to multi family customers. 21 out of 24 votes in favor of this recommendation.</li> <li>➤ Desire more recycling and composting containers in public places such as parks.</li> <li>➤ Pet waste &amp; diapers diversion – 17 out of 24 votes in favor of this recommendation.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Chapter 4    | Recycling Recommendations      | Neighborhood council / association | <ul style="list-style-type: none"> <li>➤ Two items proposed for 2014 should be moved up to 2012: <ul style="list-style-type: none"> <li>• Ban food from being allowed in the garbage</li> <li>• Promote use of reusable shopping bags</li> </ul> </li> <li>➤ Supports SPU inspectors increasing how often they look in garbage containers for materials that aren’t allowed: <ul style="list-style-type: none"> <li>• But needs to be more education, especially for the elderly.</li> <li>• While doing inspections they should also look for opportunities for people to save money by making wiser choices for their collection bins.</li> <li>• Make it clear the inspectors are not employed by the private disposal companies and there is no personal or departmental incentive for them to issue penalties or violations.</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                      |



| Plan Element                                                                                      | Plan Recommendation or Section | Source Type    | Comment or Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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| Chapter 4                                                                                         | Recycling Recommendations      | Web Survey     | <p>➤ Believes people are ready for all the recycling changes.</p> <table border="1"> <thead> <tr> <th colspan="3">11. Every other week garbage collection, single family: how satisfied would you be</th> </tr> <tr> <th>Answer Options</th> <th>Response Percent</th> <th>Response Count</th> </tr> </thead> <tbody> <tr> <td>Extremely satisfied</td> <td>13.5%</td> <td>75</td> </tr> <tr> <td>Very satisfied</td> <td>17.1%</td> <td>95</td> </tr> <tr> <td>Somewhat satisfied</td> <td>17.2%</td> <td>96</td> </tr> <tr> <td>Not very satisfied</td> <td>16.9%</td> <td>94</td> </tr> <tr> <td>Not at all satisfied</td> <td>27.6%</td> <td>154</td> </tr> <tr> <td>Don't know/No opinion</td> <td>7.7%</td> <td>43</td> </tr> <tr> <td colspan="2"><b>answered question</b></td> <td><b>557</b></td> </tr> <tr> <td colspan="2"><b>skipped question</b></td> <td><b>36</b></td> </tr> </tbody> </table><br><table border="1"> <thead> <tr> <th colspan="3">12. 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Every other week garbage collection, single family: how satisfied would you be |  |  | Answer Options | Response Percent | Response Count | Extremely satisfied | 13.5% | 75 | Very satisfied | 17.1% | 95 | Somewhat satisfied | 17.2% | 96 | Not very satisfied | 16.9% | 94 | Not at all satisfied | 27.6% | 154 | Don't know/No opinion | 7.7% | 43 | <b>answered question</b> |  | <b>557</b> | <b>skipped question</b> |  | <b>36</b> | 12. Top reason for less than satisfied with every other week garbage collection. |  |  | Answer Options | Response Percent | Response Count | I don't want to pay for a larger garbage container. | 15.5% | 51 | I don't have space to store a larger garbage container. | 3.9% | 13 | I would need a larger recycling container. | 1.8% | 6 | My garbage container would overflow. | 21.8% | 72 | It would be a hassle/inconvenient. | 1.5% | 5 | Bad smells would build up. | 10.6% | 35 | Insects, rats, mice, or other pests would get into my garbage. | 7.3% | 24 | It would be too messy/germy. | 1.5% | 5 | If I miss my pickup day, I would have to wait another 2 weeks to have my garbage picked up again. | 11.5% | 38 | My neighbors would put their garbage in my garbage container. | 0.3% | 1 | There would be more litter in my neighborhood. | 3.6% | 12 | The benefit of every other week garbage pickups is unclear to me. | 5.8% | 19 | Other | 14.8% | 49 | If you selected other, please describe in box below |  | 99 | <b>answered question</b> |  | <b>330</b> | <b>skipped question</b> |  | <b>263</b> | 13. Ban food waste from garbage : how satisfied would you be |  |  | Answer Options | Response Percent | Response Count | Strongly favor | 24.0% | 133 | Favor | 32.8% | 182 | Oppose | 18.4% | 102 | Strongly oppose | 17.8% | 99 | Not sure/No opinion | 7.0% | 39 | <b>answered question</b> |  | <b>555</b> | <b>skipped question</b> |  | <b>38</b> |
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Every other week garbage collection, single family: how satisfied would you be                |                                |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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| Extremely satisfied                                                                               | 13.5%                          | 75             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| Very satisfied                                                                                    | 17.1%                          | 95             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| Somewhat satisfied                                                                                | 17.2%                          | 96             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| Not very satisfied                                                                                | 16.9%                          | 94             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| Not at all satisfied                                                                              | 27.6%                          | 154            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| Don't know/No opinion                                                                             | 7.7%                           | 43             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| <b>answered question</b>                                                                          |                                | <b>557</b>     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| <b>skipped question</b>                                                                           |                                | <b>36</b>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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Top reason for less than satisfied with every other week garbage collection.                  |                                |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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| Answer Options                                                                                    | Response Percent               | Response Count |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| I don't want to pay for a larger garbage container.                                               | 15.5%                          | 51             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| I don't have space to store a larger garbage container.                                           | 3.9%                           | 13             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| I would need a larger recycling container.                                                        | 1.8%                           | 6              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| My garbage container would overflow.                                                              | 21.8%                          | 72             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| It would be a hassle/inconvenient.                                                                | 1.5%                           | 5              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| Bad smells would build up.                                                                        | 10.6%                          | 35             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| Insects, rats, mice, or other pests would get into my garbage.                                    | 7.3%                           | 24             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| It would be too messy/germy.                                                                      | 1.5%                           | 5              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| If I miss my pickup day, I would have to wait another 2 weeks to have my garbage picked up again. | 11.5%                          | 38             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| My neighbors would put their garbage in my garbage container.                                     | 0.3%                           | 1              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| There would be more litter in my neighborhood.                                                    | 3.6%                           | 12             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| The benefit of every other week garbage pickups is unclear to me.                                 | 5.8%                           | 19             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| Other                                                                                             | 14.8%                          | 49             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| If you selected other, please describe in box below                                               |                                | 99             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| <b>answered question</b>                                                                          |                                | <b>330</b>     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| <b>skipped question</b>                                                                           |                                | <b>263</b>     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| 13. Ban food waste from garbage : how satisfied would you be                                      |                                |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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| Answer Options                                                                                    | Response Percent               | Response Count |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| Strongly favor                                                                                    | 24.0%                          | 133            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| Favor                                                                                             | 32.8%                          | 182            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| Oppose                                                                                            | 18.4%                          | 102            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| Strongly oppose                                                                                   | 17.8%                          | 99             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| Not sure/No opinion                                                                               | 7.0%                           | 39             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| <b>answered question</b>                                                                          |                                | <b>555</b>     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| <b>skipped question</b>                                                                           |                                | <b>38</b>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| Plan Element                                                                                                      | Plan Recommendation or Section | Source Type              | Comment or Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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|                                                                                                                   |                                |                          | <table border="1"> <thead> <tr> <th>Answer Options</th> <th>Response Percent</th> <th>Response Count</th> </tr> </thead> <tbody> <tr> <td>I don't want to pay for a larger food and yard waste container.</td> <td>2.1%</td> <td>4</td> </tr> <tr> <td>I don't have space to store a larger food and yard waste container.</td> <td>1.6%</td> <td>3</td> </tr> <tr> <td>I don't have enough food and yard waste to reduce the size of my garbage container and keep my monthly bill down.</td> <td>1.0%</td> <td>2</td> </tr> <tr> <td>I'm not sure about where to put my food waste.</td> <td>1.0%</td> <td>2</td> </tr> <tr> <td>I don't want to be fined for putting my food waste in the garbage.</td> <td>11.0%</td> <td>21</td> </tr> <tr> <td>I don't want my garbage not to be collected just because there's food in it.</td> <td>29.3%</td> <td>56</td> </tr> <tr> <td>I don't want the government looking through my garbage.</td> <td>9.9%</td> <td>19</td> </tr> <tr> <td>It would be a hassle/inconvenient.</td> <td>3.7%</td> <td>7</td> </tr> <tr> <td>I would need to use my kitchen food disposal more often.</td> <td>0.5%</td> <td>1</td> </tr> <tr> <td>Bad smells would build up.</td> <td>3.7%</td> <td>7</td> </tr> <tr> <td>Insects, rats, mice, or other pests would get into my food and yard waste.</td> <td>5.8%</td> <td>11</td> </tr> <tr> <td>It would be too messy/germy.</td> <td>0.5%</td> <td>1</td> </tr> <tr> <td>The benefit of this plan is unclear to me.</td> <td>5.8%</td> <td>11</td> </tr> <tr> <td>Other</td> <td>24.1%</td> <td>46</td> </tr> <tr> <td colspan="2">If you selected other, please describe in box below</td> <td>72</td> </tr> <tr> <td colspan="2"></td> <td><b>answered question</b></td> </tr> <tr> <td colspan="2"></td> <td><b>191</b></td> </tr> <tr> <td colspan="2"></td> <td><b>skipped question</b></td> </tr> <tr> <td colspan="2"></td> <td><b>402</b></td> </tr> </tbody> </table> |  |  | Answer Options                                                                             | Response Percent | Response Count | I don't want to pay for a larger food and yard waste container. | 2.1%             | 4              | I don't have space to store a larger food and yard waste container. | 1.6%  | 3   | I don't have enough food and yard waste to reduce the size of my garbage container and keep my monthly bill down. | 1.0%  | 2   | I'm not sure about where to put my food waste.                                                      | 1.0%  | 2  | I don't want to be fined for putting my food waste in the garbage.         | 11.0% | 21 | I don't want my garbage not to be collected just because there's food in it. | 29.3% | 56 | I don't want the government looking through my garbage. | 9.9% | 19                       | It would be a hassle/inconvenient. | 3.7% | 7          | I would need to use my kitchen food disposal more often. | 0.5% | 1                       | Bad smells would build up. | 3.7% | 7         | Insects, rats, mice, or other pests would get into my food and yard waste. | 5.8% | 11 | It would be too messy/germy. | 0.5% | 1 | The benefit of this plan is unclear to me. | 5.8% | 11 | Other | 24.1% | 46 | If you selected other, please describe in box below |  | 72 |  |  | <b>answered question</b> |  |  | <b>191</b> |  |  | <b>skipped question</b> |  |  | <b>402</b> |
| Answer Options                                                                                                    | Response Percent               | Response Count           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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|  |                          |  |  |            |  |  |                         |  |  |            |
| I don't want to pay for a larger food and yard waste container.                                                   | 2.1%                           | 4                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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|  |                          |  |  |            |  |  |                         |  |  |            |
| I don't have space to store a larger food and yard waste container.                                               | 1.6%                           | 3                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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|  |                          |  |  |            |  |  |                         |  |  |            |
| I don't have enough food and yard waste to reduce the size of my garbage container and keep my monthly bill down. | 1.0%                           | 2                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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|  |                          |  |  |            |  |  |                         |  |  |            |
| I'm not sure about where to put my food waste.                                                                    | 1.0%                           | 2                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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|  |                          |  |  |            |  |  |                         |  |  |            |
| I don't want to be fined for putting my food waste in the garbage.                                                | 11.0%                          | 21                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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|  |                          |  |  |            |  |  |                         |  |  |            |
| I don't want my garbage not to be collected just because there's food in it.                                      | 29.3%                          | 56                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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|  |                          |  |  |            |  |  |                         |  |  |            |
| I don't want the government looking through my garbage.                                                           | 9.9%                           | 19                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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|  |                          |  |  |            |  |  |                         |  |  |            |
| It would be a hassle/inconvenient.                                                                                | 3.7%                           | 7                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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|  |                          |  |  |            |  |  |                         |  |  |            |
| I would need to use my kitchen food disposal more often.                                                          | 0.5%                           | 1                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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|  |                          |  |  |            |  |  |                         |  |  |            |
| Bad smells would build up.                                                                                        | 3.7%                           | 7                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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|  |                          |  |  |            |  |  |                         |  |  |            |
| Insects, rats, mice, or other pests would get into my food and yard waste.                                        | 5.8%                           | 11                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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| It would be too messy/germy.                                                                                      | 0.5%                           | 1                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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| The benefit of this plan is unclear to me.                                                                        | 5.8%                           | 11                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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Require businesses to recycle more materials such as bottles and cans: favor or oppose</th> </tr> <tr> <th>Answer Options</th> <th>Response Percent</th> <th>Response Count</th> </tr> </thead> <tbody> <tr> <td>Strongly favor</td> <td>65.8%</td> <td>364</td> </tr> <tr> <td>Favor</td> <td>25.9%</td> <td>143</td> </tr> <tr> <td>Oppose</td> <td>2.5%</td> <td>14</td> </tr> <tr> <td>Strongly oppose</td> <td>2.7%</td> <td>15</td> </tr> <tr> <td>Not sure/No opinion</td> <td>3.1%</td> <td>17</td> </tr> <tr> <td colspan="2"></td> <td><b>answered question</b></td> </tr> <tr> <td colspan="2"></td> <td><b>553</b></td> </tr> <tr> <td colspan="2"></td> <td><b>skipped question</b></td> </tr> <tr> <td colspan="2"></td> <td><b>40</b></td> </tr> </tbody> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  | 15. Require businesses to recycle more materials such as bottles and cans: favor or oppose |                  |                | Answer Options                                                  | Response Percent | Response Count | Strongly favor                                                      | 65.8% | 364 | Favor                                                                                                             | 25.9% | 143 | Oppose                                                                                              | 2.5%  | 14 | Strongly oppose                                                            | 2.7%  | 15 | Not sure/No opinion                                                          | 3.1%  | 17 |                                                         |      | <b>answered question</b> |                                    |      | <b>553</b> |                                                          |      | <b>skipped question</b> |                            |      | <b>40</b> |                                                                            |      |    |                              |      |   |                                            |      |    |       |       |    |                                                     |  |    |  |  |                          |  |  |            |  |  |                         |  |  |            |
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Require businesses to recycle more materials such as bottles and cans: favor or oppose                        |                                |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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| Strongly favor                                                                                                    | 65.8%                          | 364                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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| Favor                                                                                                             | 25.9%                          | 143                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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|  |                          |  |  |            |  |  |                         |  |  |            |
| Oppose                                                                                                            | 2.5%                           | 14                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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| Strongly oppose                                                                                                   | 2.7%                           | 15                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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| Not sure/No opinion                                                                                               | 3.1%                           | 17                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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|                                                                                                                   |                                | <b>answered question</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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|                                                                                                                   |                                | <b>skipped question</b>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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|                                                                                                                   |                                |                          | <table border="1"> <thead> <tr> <th colspan="3">16. Top reason would oppose a plan to require businesses to recycle more materials</th> </tr> <tr> <th>Answer Options</th> <th>Response Percent</th> <th>Response Count</th> </tr> </thead> <tbody> <tr> <td>It would increase the cost of doing business.</td> <td>24.1%</td> <td>7</td> </tr> <tr> <td>It would be difficult for businesses to provide space for recycling.</td> <td>0.0%</td> <td>0</td> </tr> <tr> <td>It would be difficult for businesses to make sure customers and employees recycle bottles and cans.</td> <td>24.1%</td> <td>7</td> </tr> <tr> <td>Businesses shouldn't be fined for putting bottles and cans in the garbage.</td> <td>10.3%</td> <td>3</td> </tr> <tr> <td>Businesses shouldn't have the government looking through their garbage.</td> <td>13.8%</td> <td>4</td> </tr> </tbody> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  | 16. Top reason would oppose a plan to require businesses to recycle more materials         |                  |                | Answer Options                                                  | Response Percent | Response Count | It would increase the cost of doing business.                       | 24.1% | 7   | It would be difficult for businesses to provide space for recycling.                                              | 0.0%  | 0   | It would be difficult for businesses to make sure customers and employees recycle bottles and cans. | 24.1% | 7  | Businesses shouldn't be fined for putting bottles and cans in the garbage. | 10.3% | 3  | Businesses shouldn't have the government looking through their garbage.      | 13.8% | 4  |                                                         |      |                          |                                    |      |            |                                                          |      |                         |                            |      |           |                                                                            |      |    |                              |      |   |                                            |      |    |       |       |    |                                                     |  |    |  |  |                          |  |  |            |  |  |                         |  |  |            |
| 16. 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                         |  |  |            |  |  |                         |  |  |            |
| Answer Options                                                                                                    | Response Percent               | Response Count           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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|  |                          |  |  |            |  |  |                         |  |  |            |
| It would increase the cost of doing business.                                                                     | 24.1%                          | 7                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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|  |                          |  |  |            |  |  |                         |  |  |            |
| It would be difficult for businesses to provide space for recycling.                                              | 0.0%                           | 0                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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|  |                          |  |  |            |  |  |                         |  |  |            |
| It would be difficult for businesses to make sure customers and employees recycle bottles and cans.               | 24.1%                          | 7                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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|  |                          |  |  |            |  |  |                         |  |  |            |
| Businesses shouldn't be fined for putting bottles and cans in the garbage.                                        | 10.3%                          | 3                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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|  |                          |  |  |            |  |  |                         |  |  |            |
| Businesses shouldn't have the government looking through their garbage.                                           | 13.8%                          | 4                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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|  |                          |  |  |            |  |  |                         |  |  |            |

| Plan Element | Plan Recommendation or Section | Source Type | Comment or Question                                                                                                                                                |                         |                       |
|--------------|--------------------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------------|
|              |                                |             | It would be a hassle/inconvenient.                                                                                                                                 | 0.0%                    | 0                     |
|              |                                |             | Bad smells would build.                                                                                                                                            | 0.0%                    | 0                     |
|              |                                |             | Insects, rats, mice, or other pests would into the recycling.                                                                                                      | 0.0%                    | 0                     |
|              |                                |             | It would be too messy/germy.                                                                                                                                       | 0.0%                    | 0                     |
|              |                                |             | The benefit of this plan is unclear to me.                                                                                                                         | 6.9%                    | 2                     |
|              |                                |             | Other                                                                                                                                                              | 20.7%                   | 6                     |
|              |                                |             | If you selected other, please describe in box below                                                                                                                |                         | 8                     |
|              |                                |             | <b>answered question</b>                                                                                                                                           |                         | <b>29</b>             |
|              |                                |             | <b>skipped question</b>                                                                                                                                            |                         | <b>564</b>            |
|              |                                |             | <b>17. Disposable diapers and pet waste into a separate collection container for pickup: favor or oppose</b>                                                       |                         |                       |
|              |                                |             | <b>Answer Options</b>                                                                                                                                              | <b>Response Percent</b> | <b>Response Count</b> |
|              |                                |             | Strongly favor                                                                                                                                                     | 40.6%                   | 224                   |
|              |                                |             | Favor                                                                                                                                                              | 32.6%                   | 180                   |
|              |                                |             | Oppose                                                                                                                                                             | 7.2%                    | 40                    |
|              |                                |             | Strongly oppose                                                                                                                                                    | 5.8%                    | 32                    |
|              |                                |             | Not sure/No opinion                                                                                                                                                | 13.8%                   | 76                    |
|              |                                |             | <b>answered question</b>                                                                                                                                           |                         | <b>552</b>            |
|              |                                |             | <b>skipped question</b>                                                                                                                                            |                         | <b>41</b>             |
|              |                                |             | <b>18. Top reason would oppose disposable diapers and pet waste in a separate container</b>                                                                        |                         |                       |
|              |                                |             | <b>Answer Options</b>                                                                                                                                              | <b>Response Percent</b> | <b>Response Count</b> |
|              |                                |             | I have no place to store a separate container for that kind of waste.                                                                                              | 17.9%                   | 12                    |
|              |                                |             | I don't want to be required to pay for this service.                                                                                                               | 9.0%                    | 6                     |
|              |                                |             | I don't want to be fined for putting diapers and pet waste in the garbage instead of a separate collection container.                                              | 10.4%                   | 7                     |
|              |                                |             | I don't want the government looking through my garbage.                                                                                                            | 6.0%                    | 4                     |
|              |                                |             | It would be a hassle/inconvenient.                                                                                                                                 | 20.9%                   | 14                    |
|              |                                |             | Bad smells would build up.                                                                                                                                         | 1.5%                    | 1                     |
|              |                                |             | Insects, rats, mice, or other pests would get into the diaper and pet waste collection container.                                                                  | 3.0%                    | 2                     |
|              |                                |             | It would be too messy/germy.                                                                                                                                       | 3.0%                    | 2                     |
|              |                                |             | The benefit of this plan is unclear to me.                                                                                                                         | 4.5%                    | 3                     |
|              |                                |             | Other                                                                                                                                                              | 23.9%                   | 16                    |
|              |                                |             | If you selected other, please describe in box below                                                                                                                |                         | 21                    |
|              |                                |             | <b>answered question</b>                                                                                                                                           |                         | <b>67</b>             |
|              |                                |             | <b>skipped question</b>                                                                                                                                            |                         | <b>526</b>            |
|              |                                |             | <b>19. Things would you be willing to do to reduce waste, increase recycling and composting, and keep future costs as low as possible? (Select all that apply)</b> |                         |                       |
|              |                                |             | <b>Answer Options</b>                                                                                                                                              | <b>Response Percent</b> | <b>Response Count</b> |
|              |                                |             | Increase recycling at my business.                                                                                                                                 | 36.2%                   | 198                   |

| Plan Element                                                                                                                           | Plan Recommendation or Section | Source Type                            | Comment or Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                           |       |     |                                    |       |     |                                    |       |     |                                          |       |     |                                                            |       |     |                                                                                                                                        |       |     |                                                                                                                               |       |     |         |      |    |                        |       |     |                          |  |            |                         |  |           |
|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------|-----|------------------------------------|-------|-----|------------------------------------|-------|-----|------------------------------------------|-------|-----|------------------------------------------------------------|-------|-----|----------------------------------------------------------------------------------------------------------------------------------------|-------|-----|-------------------------------------------------------------------------------------------------------------------------------|-------|-----|---------|------|----|------------------------|-------|-----|--------------------------|--|------------|-------------------------|--|-----------|
|                                                                                                                                        |                                |                                        | <table border="1"> <tr> <td>Increase recycling where I shop and work.</td> <td>59.2%</td> <td>324</td> </tr> <tr> <td>Increase my food waste composting.</td> <td>48.1%</td> <td>263</td> </tr> <tr> <td>Increase my yard waste composting.</td> <td>39.3%</td> <td>215</td> </tr> <tr> <td>Reduce the size of my garbage container.</td> <td>30.2%</td> <td>165</td> </tr> <tr> <td>Separate disposable diapers and pet waste from my garbage.</td> <td>52.5%</td> <td>287</td> </tr> <tr> <td>Pay a little more on my monthly bill so that Seattle residents and businesses can do more to reduce waste and protect the environment.</td> <td>25.0%</td> <td>137</td> </tr> <tr> <td>Have my garbage collected every other week to keep future garbage, recycling, and food and yard waste composting costs lower.</td> <td>44.4%</td> <td>243</td> </tr> <tr> <td>Nothing</td> <td>5.5%</td> <td>30</td> </tr> <tr> <td>Other (please specify)</td> <td>22.5%</td> <td>123</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>answered question</b></td> <td><b>547</b></td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>skipped question</b></td> <td><b>46</b></td> </tr> </table> | Increase recycling where I shop and work. | 59.2% | 324 | Increase my food waste composting. | 48.1% | 263 | Increase my yard waste composting. | 39.3% | 215 | Reduce the size of my garbage container. | 30.2% | 165 | Separate disposable diapers and pet waste from my garbage. | 52.5% | 287 | Pay a little more on my monthly bill so that Seattle residents and businesses can do more to reduce waste and protect the environment. | 25.0% | 137 | Have my garbage collected every other week to keep future garbage, recycling, and food and yard waste composting costs lower. | 44.4% | 243 | Nothing | 5.5% | 30 | Other (please specify) | 22.5% | 123 | <b>answered question</b> |  | <b>547</b> | <b>skipped question</b> |  | <b>46</b> |
| Increase recycling where I shop and work.                                                                                              | 59.2%                          | 324                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |       |     |                                    |       |     |                                    |       |     |                                          |       |     |                                                            |       |     |                                                                                                                                        |       |     |                                                                                                                               |       |     |         |      |    |                        |       |     |                          |  |            |                         |  |           |
| Increase my food waste composting.                                                                                                     | 48.1%                          | 263                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |       |     |                                    |       |     |                                    |       |     |                                          |       |     |                                                            |       |     |                                                                                                                                        |       |     |                                                                                                                               |       |     |         |      |    |                        |       |     |                          |  |            |                         |  |           |
| Increase my yard waste composting.                                                                                                     | 39.3%                          | 215                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |       |     |                                    |       |     |                                    |       |     |                                          |       |     |                                                            |       |     |                                                                                                                                        |       |     |                                                                                                                               |       |     |         |      |    |                        |       |     |                          |  |            |                         |  |           |
| Reduce the size of my garbage container.                                                                                               | 30.2%                          | 165                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |       |     |                                    |       |     |                                    |       |     |                                          |       |     |                                                            |       |     |                                                                                                                                        |       |     |                                                                                                                               |       |     |         |      |    |                        |       |     |                          |  |            |                         |  |           |
| Separate disposable diapers and pet waste from my garbage.                                                                             | 52.5%                          | 287                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |       |     |                                    |       |     |                                    |       |     |                                          |       |     |                                                            |       |     |                                                                                                                                        |       |     |                                                                                                                               |       |     |         |      |    |                        |       |     |                          |  |            |                         |  |           |
| Pay a little more on my monthly bill so that Seattle residents and businesses can do more to reduce waste and protect the environment. | 25.0%                          | 137                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |       |     |                                    |       |     |                                    |       |     |                                          |       |     |                                                            |       |     |                                                                                                                                        |       |     |                                                                                                                               |       |     |         |      |    |                        |       |     |                          |  |            |                         |  |           |
| Have my garbage collected every other week to keep future garbage, recycling, and food and yard waste composting costs lower.          | 44.4%                          | 243                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |       |     |                                    |       |     |                                    |       |     |                                          |       |     |                                                            |       |     |                                                                                                                                        |       |     |                                                                                                                               |       |     |         |      |    |                        |       |     |                          |  |            |                         |  |           |
| Nothing                                                                                                                                | 5.5%                           | 30                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |       |     |                                    |       |     |                                    |       |     |                                          |       |     |                                                            |       |     |                                                                                                                                        |       |     |                                                                                                                               |       |     |         |      |    |                        |       |     |                          |  |            |                         |  |           |
| Other (please specify)                                                                                                                 | 22.5%                          | 123                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |       |     |                                    |       |     |                                    |       |     |                                          |       |     |                                                            |       |     |                                                                                                                                        |       |     |                                                                                                                               |       |     |         |      |    |                        |       |     |                          |  |            |                         |  |           |
| <b>answered question</b>                                                                                                               |                                | <b>547</b>                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |       |     |                                    |       |     |                                    |       |     |                                          |       |     |                                                            |       |     |                                                                                                                                        |       |     |                                                                                                                               |       |     |         |      |    |                        |       |     |                          |  |            |                         |  |           |
| <b>skipped question</b>                                                                                                                |                                | <b>46</b>                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |       |     |                                    |       |     |                                    |       |     |                                          |       |     |                                                            |       |     |                                                                                                                                        |       |     |                                                                                                                               |       |     |         |      |    |                        |       |     |                          |  |            |                         |  |           |
| Chapter 4                                                                                                                              | Recycling Recommendations      | Seattle Solid Waste Advisory Committee | <ul style="list-style-type: none"> <li>➤ Every other week garbage collection single family. Pilot needs to be run, decision based on results. Should reward those who reduce overall volume. Of SWAC members present, 4 enthusiastic, 2 skeptical, 1 not sure.</li> <li>➤ Organics (food) Bans. Has city done analysis? Should emphasize education, roll out with educational component. Should do all sectors at same time. Do sooner than 2014. Consider phasing in by service area sectors, starting as soon as 2013. Anticipate and deal with racial inequalities.</li> <li>➤ Bans and Enforcement. Social justice and inclusion – need to put time and dollars towards effectiveness. More concurrent education of policies and bans.</li> <li>➤ Pet waste &amp; diapers in 2020 - why then?</li> <li>➤ Plastic bag ban – why just plastic bags?</li> <li>➤ Waste Prevention – Focus should be on reduction and reuse. Up-cycling is left out, should educate around this concept, reuse for all other uses.</li> <li>➤ Papercuts. Should make clearer what we’re recommending to continue.</li> </ul>                                                                                                     |                                           |       |     |                                    |       |     |                                    |       |     |                                          |       |     |                                                            |       |     |                                                                                                                                        |       |     |                                                                                                                               |       |     |         |      |    |                        |       |     |                          |  |            |                         |  |           |
| Chapter 4                                                                                                                              | Recycling Recommendations      | Environmental non-profit               | <ul style="list-style-type: none"> <li>➤ Single Family garbage and recycling collection: Adopt bi-weekly garbage collection and weekly recycling collection at the earliest possible date. <ul style="list-style-type: none"> <li>• Weekly recycling collection should be adopted first before garbage collection moves to every other week.</li> <li>• Continually hear from Garden Hotline ratepayers that they’ve reduced their garbage can size, rarely have considerable volume of garbage, and now have more recycling than always able to store in their container.</li> </ul> </li> <li>➤ Multi Family Organics Container Pricing: Recommends adopting rate structure where container price decreases proportionally as volume increases. This provides incentives for managers to purchase larger containers and thus increase capacity for residents to recycle organic wastes.</li> </ul>                                                                                                                                                                                                                                                                                                            |                                           |       |     |                                    |       |     |                                    |       |     |                                          |       |     |                                                            |       |     |                                                                                                                                        |       |     |                                                                                                                               |       |     |         |      |    |                        |       |     |                          |  |            |                         |  |           |
| Chapter 4                                                                                                                              | Recycling Recommendations      | Seattle Public Utilities employee      | <ul style="list-style-type: none"> <li>➤ Draft plan is brilliant. Comprehensive and clear.</li> <li>➤ Extend commercial ban to additional materials – do sooner than 2014.</li> <li>➤ Should better align the start years of the C&amp;D materials bans (wood, film, etc) in the MSW and C&amp;D sectors.</li> <li>➤ Banning C&amp;D materials from MSW – might be inefficient, confusing and difficult to enforce.</li> <li>➤ More outreach – Should prioritize/refocus existing outreach resources instead of enhancing commercial outreach and restoring education funding.</li> <li>➤ Change the recommendation for every other week single-family garbage collection to “consider.”</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                           |       |     |                                    |       |     |                                    |       |     |                                          |       |     |                                                            |       |     |                                                                                                                                        |       |     |                                                                                                                               |       |     |         |      |    |                        |       |     |                          |  |            |                         |  |           |

| Plan Element | Plan Recommendation or Section   | Source Type                            | Comment or Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
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|              |                                  |                                        | <ul style="list-style-type: none"> <li>➤ Carpet take-back 2012 – is in the works to start 2012?</li> <li>➤ Textiles – start sooner than 2016.</li> <li>➤ Pet waste &amp; diapers – Should qualify “if affordable.” If we service this as a 4<sup>th</sup> collection stream could be too much.</li> <li>➤ Contracted services – should word more consistently in the summary matrix for collection, processing and disposal.</li> <li>➤ Dirty MRF – reword PD9 in summary matrix “no facilities for mixed solid waste” to allow for dirty MRF.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Chapter 4    | Recycling Recommendations        | Seattle Public Utilities staff group   | <ul style="list-style-type: none"> <li>➤ How will new enforcement be funded? Did planners consider the human resource needs of these programs? [Savings from less disposal should offset increased enforcement costs.]</li> <li>➤ The “oops” tag” that is put on garbage containers that include recyclables should list all of the recyclable items as an educational tool.</li> <li>➤ We could improve compliance by using more carrot (showing customers how to save money on collection costs) than stick (paying a fine for non-compliance).</li> <li>➤ The ban on C&amp;D material in the garbage could increase illegal dumping.</li> <li>➤ The bans recommended in the plan don’t seem all that onerous.</li> <li>➤ Solid Waste Inspectors would like to know the legal citation (which state or local law) that gives them the authority to inspect garbage containers.</li> <li>➤ We need to enforce the regulations fully or not at all</li> <li>➤ The UW’s diversion of Styrofoam from garbage to recycling is a solid waste success story.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Chapter 4    | Recycling Recommendations        | Environmental advocacy representatives | <p><i>Editor’s note: R# refers to Plan recommendations as numbered in the recommendations matrix that follows the Executive Summary.</i></p> <ul style="list-style-type: none"> <li>➤ R2 – continue to require recyclable or compostable serve-ware. Should tout product stewardship driving design change of food service ware to compostable.</li> <li>➤ R3 – multi family organics universal service. Should clearly footnote that it actually started in 2011.</li> <li>➤ R5 – carpet take-back. Should say voluntary vs. ban, and add more description.</li> <li>➤ R8 – ABC ban. Should clearly state the legislation already passed.</li> <li>➤ R13 – Single family organics ban. Should start sooner.</li> <li>➤ R14 – Reusable bag campaign. Activist group is doing this in 2012.</li> <li>➤ R16 – Extend commercial ban to more materials. Should start sooner. Activist group plans to urge city council action in 2012.</li> <li>➤ R18 – Plastic film ban. Should start sooner. SPU should model a collection program for plastic film.</li> <li>➤ R21 – Every other week garbage collection single family. Should separate timing of starting EOW and rate increase. Should pair with single family food organics ban R13.</li> <li>➤ R22 – Paint product stewardship. Should start sooner.</li> <li>➤ R28 – Pet waste &amp; diapers. Should start sooner. SPU could tie finding the solution with the organics processing RFP.</li> <li>➤ Enforcement – Should find ways to provide incentives, like volunteers to be checked, random checking, prize for doing well.</li> </ul> |
| Chapter 4    | Recycling Recommendations - Bans | Solid waste industry                   | <ul style="list-style-type: none"> <li>➤ Supports continued use of disposal bans when the ban is pragmatic and easily defined. Applaud past bans where course of action planned and sufficient transition lead-time. Phased approach provides development time for collection and processing infrastructure and markets.</li> <li>➤ Plastic film and bag bans: Supports these bans. Concerned about viability of existing end markets for plastic generated in</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

| Plan Element                                 | Plan Recommendation or Section                 | Source Type                            | Comment or Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
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|                                              |                                                |                                        | <p>Seattle. Encourages receptiveness to alternative technologies as possible markets for growing volume of difficult to recycle material as plastic film and bags. Will ensure multiple end-markets, encourage local alternatives that would reduce greenhouse gas emissions.</p> <p>➤ Food waste ban: Supports the proposed food waste ban schedule. Extremely concerned about local market ability to absorb added volume. Encourages ensuring sufficient and environmentally sound markets.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| Chapter 4                                    | Recycling Recommendations – Take-back programs | Transfer Station Survey                | <table border="1"> <thead> <tr> <th colspan="3">3. Carpet take-back program: how supportive.</th> </tr> <tr> <th>Answer Options</th> <th>Response Count</th> <th>Response Percent</th> </tr> </thead> <tbody> <tr> <td>1 Least supportive</td> <td>10</td> <td>10%</td> </tr> <tr> <td>2</td> <td>0</td> <td>0%</td> </tr> <tr> <td>3</td> <td>2</td> <td>2%</td> </tr> <tr> <td>4</td> <td>11</td> <td>11%</td> </tr> <tr> <td>5</td> <td>12</td> <td>12%</td> </tr> <tr> <td>6</td> <td>7</td> <td>7%</td> </tr> <tr> <td>7 Most supportive</td> <td>57</td> <td>58%</td> </tr> <tr> <td><b>Total Count</b></td> <td><b>99</b></td> <td></td> </tr> </tbody> </table><br><table border="1"> <thead> <tr> <th colspan="3">4. Paint take-back program: how supportive</th> </tr> <tr> <th>Answer Options</th> <th>Response Count</th> <th>Response Percent</th> </tr> </thead> <tbody> <tr> <td>1 Least supportive</td> <td>7</td> <td>7%</td> </tr> <tr> <td>2</td> <td>1</td> <td>1%</td> </tr> <tr> <td>3</td> <td>2</td> <td>2%</td> </tr> <tr> <td>4</td> <td>6</td> <td>6%</td> </tr> <tr> <td>5</td> <td>7</td> <td>7%</td> </tr> <tr> <td>6</td> <td>4</td> <td>4%</td> </tr> <tr> <td>7 Most supportive</td> <td>71</td> <td>72%</td> </tr> <tr> <td>no answer</td> <td>1</td> <td>1%</td> </tr> <tr> <td><b>Total Count</b></td> <td><b>99</b></td> <td></td> </tr> </tbody> </table> | 3. Carpet take-back program: how supportive. |  |  | Answer Options | Response Count | Response Percent | 1 Least supportive | 10 | 10% | 2 | 0 | 0% | 3 | 2 | 2% | 4 | 11 | 11% | 5 | 12 | 12% | 6 | 7 | 7% | 7 Most supportive | 57 | 58% | <b>Total Count</b> | <b>99</b> |  | 4. Paint take-back program: how supportive |  |  | Answer Options | Response Count | Response Percent | 1 Least supportive | 7 | 7% | 2 | 1 | 1% | 3 | 2 | 2% | 4 | 6 | 6% | 5 | 7 | 7% | 6 | 4 | 4% | 7 Most supportive | 71 | 72% | no answer | 1 | 1% | <b>Total Count</b> | <b>99</b> |  |
| 3. Carpet take-back program: how supportive. |                                                |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| Answer Options                               | Response Count                                 | Response Percent                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 1 Least supportive                           | 10                                             | 10%                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 2                                            | 0                                              | 0%                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 3                                            | 2                                              | 2%                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 4                                            | 11                                             | 11%                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 5                                            | 12                                             | 12%                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 6                                            | 7                                              | 7%                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 7 Most supportive                            | 57                                             | 58%                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| <b>Total Count</b>                           | <b>99</b>                                      |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 4. Paint take-back program: how supportive   |                                                |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| Answer Options                               | Response Count                                 | Response Percent                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 1 Least supportive                           | 7                                              | 7%                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 2                                            | 1                                              | 1%                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 3                                            | 2                                              | 2%                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 4                                            | 6                                              | 6%                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 5                                            | 7                                              | 7%                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 6                                            | 4                                              | 4%                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| 7 Most supportive                            | 71                                             | 72%                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| no answer                                    | 1                                              | 1%                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| <b>Total Count</b>                           | <b>99</b>                                      |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| Chapter 4                                    | Transfer                                       | Environmental advocacy representatives | <p>➤ Should look at Metro Portland’s RFP for 20-year infrastructure development incorporating product stewardship.</p> <p>➤ Consider discussing rate-payer benefit from extending the lives of the stations from manufacturers doing more.</p> <p>➤ Think about producer/manufacturers funding their parts of the stations. Could post signs “this part of the transfer station brought to by ....”</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| Chapter 5                                    | Construction & Demolition Debris               | Seattle Public Utilities employee      | <p>➤ C&amp;D materials bans – should not expect new bans (metal, OCC) in 2012, might not make schedule.</p> <p>➤ Asphalt Shingles ban – Add separate plan recommendation to work with SDOT to modify their paving spec, by 2013 to include RAS in HMA. Work with WADOT to do same by 2014. Include new recommendation(s) in Market Development.</p> <p>➤ C&amp;D deconstruction vs salvage – in the recommendations summary matrix could not understand difference between CD2 and CD4.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| Chapter 5                                    | Construction & Demolition Debris               | Environmental advocacy representatives | <p>➤ Consider adding an “approach” piece, describing what would be happening on job sites.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |
| Chapter 5                                    | Construction & Demolition Debris               | Solid waste industry                   | <p>➤ Supports plans to certify processing facilities and regulate the 90/10 Rule.</p> <p>➤ LEED Certification Changes: Encourage working with Green Building Council to tighten LEED recycling definitions and</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                              |  |  |                |                |                  |                    |    |     |   |   |    |   |   |    |   |    |     |   |    |     |   |   |    |                   |    |     |                    |           |  |                                            |  |  |                |                |                  |                    |   |    |   |   |    |   |   |    |   |   |    |   |   |    |   |   |    |                   |    |     |           |   |    |                    |           |  |

| Plan Element | Plan Recommendation or Section      | Source Type                               | Comment or Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------|-------------------------------------|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |                                     |                                           | <p>reporting requirements. C&amp;D used as Alternative Daily Cover or “landfill stabilizer” should not be allowed to count toward LEED certification points as recycling or Beneficial Reuse.</p> <ul style="list-style-type: none"> <li>➤ Facility Certification: Seattle’s certification process should extend to requirement that any material generated with the city limits be delivered to a certified facility. City should devote sufficient staff to regulate the facilities. Compliance should include regular recycling facility inspections and audits of weight tickets and sales receipts.</li> <li>➤ Collection Oversight: Hauling oversight is only way to bring integrity to the activity “on the street.” Supports Seattle’s 90/10 rule, and C&amp;D recycling facilities achieve required diversion rates.</li> <li>➤ Universal C&amp;D Sorting at Certified Facilities: Seattle should continue to explore requiring all C&amp;D to be processed, with specifications limiting recyclable materials in residual waste after processing, instead of the incoming feedstock or the tons separated for recycling. Will reduce opportunity for sham recycling, and result in investment of facilities.</li> </ul> |
| Chapter 5    | C&D, Historic Landfills, Clean City | Seattle Solid Waste Advisory Committee    | <ul style="list-style-type: none"> <li>➤ Several comments asking for clarification or more detail in the text.</li> <li>➤ Several editorial suggestions.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Chapter 5    | Clean City Programs                 | Seattle Public Utilities staff group      | <ul style="list-style-type: none"> <li>➤ Litter – Adopt A Street p5-31: <ul style="list-style-type: none"> <li>• We don’t use the term “ground litter” in materials/outreach to public; recommend removing “ground.</li> <li>• Amend 2nd sentence: Volunteers can either agree to adopt .... 2 years or can conduct a one-time cleanup.</li> <li>• Amend 3rd sentence: The city provides...that credit adopters, (for volunteers that adopt a minimum of one mile for two years).</li> <li>• Amend 4th sentence: Program staff ...Adopt-a-Street volunteers, the number of...litter collection, and the number of bags collected.</li> </ul> </li> <li>➤ Community Cleanup – Spring Clean p5-32 <ul style="list-style-type: none"> <li>• Amend 1st sentence to describe program runs April through May.</li> <li>• Amend 2nd sentence: SPU provides collection supplies; including trash bags, safety vests, gloves, and garbage grabbers along with trash disposal.</li> <li>• Amend 3rd sentence: adding number of volunteers to tracking.</li> </ul> </li> </ul>                                                                                                                                                               |
| Chapter 5    | Hazardous Waste Management          | Local Hazardous Waste Plan Administration | <ul style="list-style-type: none"> <li>➤ Section 5.4.2 Planning Issues, page 5-35: <ul style="list-style-type: none"> <li>• Revise introductory statement to accurately reference the 1990 plan that has been updated twice, in 1997 and 2010.</li> <li>• The list of issues is fine</li> </ul> </li> <li>➤ Section 5.4.4 Alternatives and Recommendations, page 5-36, please <ul style="list-style-type: none"> <li>• revise 1st bullet [re service hours a Seattle’s MRW facilities] to “monitor Seattle’s MRW collection facilities to ensure maximum equitable service hours needed are achieved.”</li> <li>• Revise 2nd bullet [re CESQG collection pilot] to “extend the CESQG collection program.” The pilot is done.</li> <li>• Make sure to make corresponding corrections in Executive Summary page 18, and in the Recommendations section (MRW1, MRW2)</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                          |
| Chapter 5    | Hazardous Waste Management          | Seattle Public Utilities                  | <ul style="list-style-type: none"> <li>➤ Hazardous waste and product stewardship - can be stronger about producer vs rate payer responsibility in long term haz waste funding, plan to limit/reduce MSW rate payer contribution? Focus on toxic pesticides, cleaners or other common household haz waste for product stewardship? MSW rate payers pay a lot for LHWMP materials disposal and</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

| Plan Element | Plan Recommendation or Section | Source Type                               | Comment or Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------|--------------------------------|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |                                | employee                                  | prevention, but many rate payers don't consume the materials managed by LHWMP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Chapter 5    | Special Wastes                 | Local Hazardous Waste Plan Administration | ➤ Table 5-7, page 5-38 Batteries. LHWMP recently started accepting alkaline batteries for HHW disposal, although may no longer be regarded as hazardous per recent news from Ecology. May want to revise the table.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Chapter 5    | Special Wastes                 | Environmental advocacy representatives    | ➤ Do more to highlight targeted materials.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Chapter 6    | Administration and Financing   | Seattle Public Utilities staff group      | <p>➤ Seems odd that Education is in this chapter and not elsewhere. Is "administration" meant to denote "implementation?" If so, consider changing the word.</p> <p>➤ Benchmarking rates and spending to other utilities is largely absent from the financial plan. SPU has some of the highest per customer costs for total removal of all customer generated materials. SPU customer costs are much higher than most other major city utilities of comparable size and volume, and significantly higher than other western Washington utilities. Why are Seattle's rates/costs so much higher? What services/benefits do SPU ratepayers get that other utilities don't offer? Many of the strategies suggested in the Plan would appear to add additional customer costs. While the benefits of recycling and diversion from the landfill stream are understood from the utility viewpoint, they may or may not translate to keeping ratepayer rates lower. Would a further menu approach where customers could opt out of selected solid waste services they don't use/need, provide an opportunity for better customer service?</p> <p>➤ The cost of commercial waste continues to be relatively low compared to other sectors, and is probably contributing to the lack of recycling/reuse. Is SPU providing the correct price signal? Where are financing/behavior change strategies discussed in the plan?</p> |
| Chapter 6    | Financing                      | Environmental advocacy representatives    | ➤ Should show the impact of producer responsibility on (reducing) program costs. For example E-cycle Washington. In finance section (of executive summary and chapter), should bring out that we're also working on product stewardship systems that will shift costs from ratepayers. Product stewardship also takes tons from moving through the system. Should mention the equity that comes from the shifting of costs with product stewardship, the risk sharing (like in recycling processor contract) that can happen with product stewardship.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Misc         | Misc                           | Citizen                                   | ➤ Would like to have [lawnmower] collected and pay the \$8.20 extra fee, rather than take this one item to the dump and pay \$30. Our garbage man refused to take it. What can we do?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## Written Comments from Web Survey

### All regarding select Chapter 4 Recycling Recommendations

| Survey Question                          | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12<br>Why not satisfied with every other | <p>1 all of the issues listed above</p> <p>2 all of the above. the public health issues plus my personal health issues contribute to my dread of implementation of this plan. the every other week recycling pickup is already a health and safety issue - the amount overflows the container, piling up, creating fire safety issues, blowing around, spilling over, breaking glass, and the weight of the container is too much for me to move safely. decreasing garbage pickup would add to these difficulties, plus increase the public health hazards from insects and</p> |



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|-----------------------------------------------------|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| week single family<br>garbage collection<br>- Other |    | vermin from storing garbage for the increased amount of time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                     | 3  | I am the manager of a 92 unit building for formerly homeless/low income single adults.                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                     | 4  | There is much education and community engagement with the low income housing developments. They need to have equal access as to recycling as in any other neighborhood                                                                                                                                                                                                                                                                                                                                                                         |
|                                                     | 5  | My landlord takes care of all of this, but I'd say almost every option listed above could apply                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                     | 6  | Our multi-family dumpsters are already overflowing with weekly pick up. Plus, this would create a rodent nightmare, as landlords we are responsible for maintaining a safe & healthy environment for our tenants. This would not be possible with pick up only every 2 weeks                                                                                                                                                                                                                                                                   |
|                                                     | 7  | Bad smells, pests would be attracted, if I missed a pick up it would be another 2 weeks till the next, I would run out of space, there is no indication that my garbage bill would decrease with less service.                                                                                                                                                                                                                                                                                                                                 |
|                                                     | 8  | Unsanitary bad smells, and we have rats in the neighborhood. around holidays I have more garbage. It is wasteful to rinse off disposable plate and I still have styrofoam. Recycling doesn't take styrofoam packing materials so it would take weeks to get rid of it. I don't put food in my lawn scrapes because it's too cumbersome to haul it weekly to the curb. I don't like the idea at all.                                                                                                                                            |
|                                                     | 9  | All of the above. Cost, space and sanitation are a huge issue already for me.                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                     | 10 | and some of the other choices-like miss a day and it would be two weeks, don't want to get a bigger container, smells, and general feeling of neglect.                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                     | 11 | My condo has pickup twice week and usually very full, therefore pickup every other week wouldn't work                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                     | 12 | Hard to pick the main reason as a lot of the reasons listed above are major concerns: having to wait a month if missed one week, the sanitation concerns, rodents (which are a real issue where I am at), smells, liter. I appreciate it could save a lot of money, but feel the costs to your customers is too high.                                                                                                                                                                                                                          |
|                                                     | 13 | I produce very little garbage. If I could dispense with garbage pick up altogether and just take a small can once a year or as needed to the transfer station, it would save me money. Or just have a once a year or once every 6 months garbage pick up--that would also save me money and probably save you money too.                                                                                                                                                                                                                       |
|                                                     | 14 | all of the above. seriously, they all apply.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                     | 15 | Actually, most of the choices in the above pull-down menu would apply. It can't be good to have garbage sitting more more than a week.                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                     | 16 | I currently have the smallest collection container. I would need to either get a larger container, which would increase my out of pocket costs.                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                     | 17 | My concerns are split equally between not wanting to pay for a larger garbage container and the need to wait two weeks if I miss my collection day.                                                                                                                                                                                                                                                                                                                                                                                            |
|                                                     | 18 | If you would fine people for not recycling and using composting then we might have enough room because all people would then do what is needed. Another issue is to be able to recycle packaged solid Styrofoam and bagged peanuts. This take way too much room in the dumpster. We are starting to take this stuff to Ikea who takes this and recycles it. Why not here in Seattle. We should be able to recycle far more stuff than you allow us to do. This should be the priority before changing garbage dump cycles.                     |
|                                                     | 19 | While our household observes the requirements to recycle and compost, other households do not. I think our garbage collection needs would be easily met by an every other week collection but I worry about the consequences regarding less responsible households and I would hope that SPU would issue odor eating type receptacles to address smell issues/rodents/critters etc. We also own a triplex rental residence and if tenants missed their garbage pick up date, that would also concern us since we are responsible for the bill. |
|                                                     | 20 | other' because so many of the above apply. I think it would be unsanitary.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                                     | 21 | please dont do this... for all the drop down reasons and more                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                     | 22 | Not to mention odor and larger garbage containers. When SPU started allowing food waste in the yard waste bin - you all said, no problem, our units are rodent proof. They are not and I do not compost my food waste. I bag and throw in the trash.                                                                                                                                                                                                                                                                                           |
|                                                     | 23 | Combined - smell, pests, and germs. (Three issues I already face with food scraps in yard waste.)                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                     | 24 | There are a number of reasons, but the above takes the cake. We don't fill it up every week, but it sure is stinky!                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                                     | 25 | A learning process                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                                                     | 26 | recycling container is full every time based on a two week cycle. Many things that could be recycled are not accepted in the recycling program, thus default to garbage. Reduce packing materials, recycle styrofoam, all for additional plastic and go to weekly recycling and yard waste. Then every other week garbage might work if you increased the container size for the same price.                                                                                                                                                   |
|                                                     | 27 | We live in an area with rats, squirrels, racoons, mice and bats. This back up of garbage, smells, germs would attract even more. Also garbage cans would be WAY too heavy if every other week. Our household already overflows with recycling. No good reason to change service. Leave it as is.                                                                                                                                                                                                                                               |
|                                                     | 28 | Most of the options from the drop-down list apply. Existing garbage container size options are preferable. I compost my own food and recycle so much, but reducing garbage pick up would cause many problems like rats and smells. Reduction in pick up would encourage many to dump trash into their recycling, actually hampering recycling efforts.                                                                                                                                                                                         |
|                                                     | 29 | why should i pay MORE for less service????                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                                     | 30 | And the smell, we already use a micro can...which works once a week, but we would need a bigger can.                                                                                                                                                                                                                                                                                                                                                                                                                                           |

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| 31 | RECYCLING SHOULD BE PICKED UP EVERY WEEK. MY RECYCLE BIN IS ALWAYS OVERFLOWING WHILE MY GARBAGE CAN SITS HALF FULL                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 32 | Also, I would need a larger garbage container. Once a week garbage pick up should definitely continue!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 33 | The last question, in which I answered somewhat satisfied, was flawed. It didn't provide any information, such as, will the customer pay LESS for every-other-week garbage service? Will the customer have a larger garbage container? etc. Perhaps that is all addressed in the master plan, which I should probably read.                                                                                                                                                                                                                                                            |
| 34 | If my overall monthly rate didn't increase and the volume of trash I could dispose of remained the same, that would be okay. Shoreline had the option of a 32gal trash container w/ monthly pickup and I loved it. Unless I had to miss a pickup week, then I was screwed.                                                                                                                                                                                                                                                                                                             |
| 35 | Every other week would be great as long as we had an option to get a larger garbage container if needed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 36 | All of the reasons apply. It creates a huge hassle. I don't make much actual garbage, but this would make me very angry (and I am far more "green tolerant" than most of the people I know.)                                                                                                                                                                                                                                                                                                                                                                                           |
| 37 | 2nd top reason - bad smells would build up (specifically, I'm concerned about dealing with diapers, any plan to recycle dirty diapers yet?)                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 38 | All of the above when it a large multi complex living situation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 39 | My garbage will be very, very heavy after 2 weeks. The other reasons from the drop down menu are concerns, as well.                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 40 | It's a combination of several: We use a small can now and typically fill it. If we could use a larger can at the same weekly cost, then every-other-week pickup would be OK.                                                                                                                                                                                                                                                                                                                                                                                                           |
| 41 | ALL of the above are concerns. I just think it would add to the overall run down neighborhood look/feel of Lake City.                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 42 | At least in the summer time, we generate enough yard waste to fill our compost every week. If garbage is picked up every other week that would fine, but I'd still want compost every week at least from Spring and well into the Fall. November-February wouldn't need yard waste pick-up every week.                                                                                                                                                                                                                                                                                 |
| 43 | My main problem is recycling. We are overflowing and have to use extra recycling cans every week. Recycling pickup every week is what matters to me.                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 44 | There is more than one answer for this; the "missed day" issue is also imp't, as are others                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 45 | Definitely there will be litter along Delridge Way as we already have this problem from overflowing garbage cans at SHA buildings. My own garbage can will be too small for 2 weeks worth of garbage and I don't want to increase the size and pay more. I am also concerned about attracting rats and racoons which are a problem in my neighborhood.                                                                                                                                                                                                                                 |
| 46 | Tenants are not as careful about garbage, and bin would overflow every week.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 47 | On occasion my can may overflow and I don't want to pay for a larger can just to avoid that a few times a year.                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 48 | I don't have a way to clean my yard waste/food container, therefore I don't use it. If SPU cleaned the containers I would be able to use it without creating bacteria and other pathogens.                                                                                                                                                                                                                                                                                                                                                                                             |
| 49 | Actually all of the above is the correct answer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 50 | only if it allowed for some extra bags to be put out once in a while for free for those times when you might for one week have more.                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 51 | All the above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 52 | there are several reason why I think this is a very bad idea, but the drop-down only lets me choose one selection.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 53 | Our container fills up every week. As do the recycling and food waste containers. If we were moved to every other week, Many of the reasons listed above would apply.                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 54 | Container, if larger, may be heavier and more unwieldy. We have many steps between lot level and stree level to move container.                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 55 | Multiple reasons are listed that I feel are valid- topmost are the voume of trash and hygiene concerns noted. As it stands, although food scraps can be placed in yard waste, the packaging materials and other waste that cannot be placed in recycle bins because they are contaminated by food and are not valid for composting will attract vermin when left for a 2-week period. Compound that with overflowing bins and problems with racoons/rats- and the burden to individuals to maintain a sanitary refuse location simply outweighs any savings to SPU                     |
| 56 | Right now, weekly pickup is perfect for my family. We have two bags of garage that go into a regular sized can. We don't currently overflow, but would with pick-up every other week. Our garage is full of dirty diapers and kitty litter. It gets really stinky as it is.                                                                                                                                                                                                                                                                                                            |
| 57 | All of the reasons you mentioned above other.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 58 | I would like my billing to be reduced by 50%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 59 | I have a micro-mini garbage can and pretty well fill it each week.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 60 | 2 reasons - stench @ contaminated recycling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 61 | really all of the above options i would like to choose.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 62 | I have no problem with the trash and recycling being picked up every two weeks, but I have a major problem with the food and yard waste. I have more nats, flies and bad smells because of the food & yard waste recycling. The container gets really nasty with food sticking to the bottom and sides. Not all the food is emptied from the container on trash pickup days so washing it is really messy. Picking up this container every two weeks would compound the problems with insects, smells and mess. I haven't noticed rodents but if its left out I'm sure they will come. |

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| 63 | It should be all of the above for this question                                                                                                                                                                                                                                                                                                                                        |
| 64 | I can not afford a yard waste container. I use the neighbors as I share the yearly cost with her. If the city went to once every two weeks, would you provide me with a yard waste container at no cost and reduce my garbage bill?                                                                                                                                                    |
| 65 | BioBag starts decomposing rapidly. When I miss my weekly pickup I have to use a 2nd BioBag around my food scraps to keep them from leaking out into my yard waste cart.                                                                                                                                                                                                                |
| 66 | I would also worry about pests. Especially during the summer. I would be fine with garbage pick up every two weeks in the winter, but not in the summer months.                                                                                                                                                                                                                        |
| 67 | 2 weeks to go by without any garbage service is RIDICULOUS!!!!                                                                                                                                                                                                                                                                                                                         |
| 68 | There are times when I have extra garbage but most of the time we do not fill our regular garbage bin weekly so we could adjust. However, I know that there would be times that I would feel annoyed by this especially if we were not discounted for the inconvenience.                                                                                                               |
| 69 | Because we have a larger household, there are times that garbage would overflow. And we don't want to go two weeks to wait for the next pick up.                                                                                                                                                                                                                                       |
| 70 | How about all of the above? Also, my cost of garbage collection should go down by 50% as well. This is a total rip-off!!!                                                                                                                                                                                                                                                              |
| 71 | when my kid is out of diapers than picking up garbage every other week would be fine                                                                                                                                                                                                                                                                                                   |
| 72 | Food wastes get too stinking and will attract bugs and rodents and I will need to get a larger container which I DO NOT have room for.                                                                                                                                                                                                                                                 |
| 73 | I don't have space for another big container and we currently fill our container weekly. Our recycling container is filled every 2 weeks and our yardwaste is usually filled most of the time.                                                                                                                                                                                         |
| 74 | This would suck                                                                                                                                                                                                                                                                                                                                                                        |
| 75 | I don't want to pay for a larger container and would seriously consider 'dumping' refuse in other others, even illegally. I don't have space for a larger container. There would be increase problem with rodents, racoons, and unsafe/unsanitary conditions. Pet waste would be prove to contribute to major odor issues.                                                             |
| 76 | All of the reason listed in this drop down are reason why biweekly would be not very satisfactory.                                                                                                                                                                                                                                                                                     |
| 77 | There is no recycle plan or location for styrofoam packaging and so the only recourse is to put that material into the gargabe - consequently twice a month may not be sufficient unless there is some reduction in closed-cell foam and styrofoam packaging.                                                                                                                          |
| 78 | Even with all of the recycling we do, with kids, our garbage is always full by pick-up day; please don't make us have our garbage overflowing with a pick-up every other week.                                                                                                                                                                                                         |
| 79 | All of the reasons that you list are valid. I am a single person but in looking at my neighbors, they would have a tough time with the every other week schedule which would impact the neighborhood with a gigantic mess and overflowing recepticals.                                                                                                                                 |
| 80 | If cost is reduced I would be satisfied                                                                                                                                                                                                                                                                                                                                                |
| 81 | This is a really terrible idea. Many more than one of the drop-down menu items are true. It would be unsanitary, smelly, and increase litter in the neighborhood. And imagine the disaster if I forgot to put the can out one day? The garbage would pile up for 4 weeks, a REAL health hazard. I see lawsuits on the horizon if you continue with this ill-advised cost-cutting plan. |
| 82 | We are using a very small garbage container. It gets pretty full by the end of some weeks, even though we are avid recyclers. I don't want to spend more for a larger can.                                                                                                                                                                                                             |
| 83 | All of the above. It would be unsanitary, smell bad, increase litter, critters would get into the garbage more often, no room to store extra garbage, etc. All the reasons you listed.                                                                                                                                                                                                 |
| 84 | More frequent compost pickup, starts to smell ...                                                                                                                                                                                                                                                                                                                                      |
| 85 | Currently my garbage is full weekly. So is my food/yardwaste container and every other week my recycling. I have the largest possible containers for my location.                                                                                                                                                                                                                      |
| 86 | In addition to my selection above, my husband and I don't always fill our garbage, but we have many events at our house and normally do. This would be a big inconvenience to use. Garbage should be picked up every week!                                                                                                                                                             |
| 87 | Combination of smells, rats/pests, and really slimy compost bin                                                                                                                                                                                                                                                                                                                        |
| 88 | It is very difficult to have a large garbage container in a small apartment, and our garbage is often overflowing.                                                                                                                                                                                                                                                                     |
| 89 | I do have a lot less garbage, but enjoy having a tiny garbage can because my storage area (townhome) is small.                                                                                                                                                                                                                                                                         |
| 90 | My recycling bin is already overflowing almost every pickup; it would be much worse if the garbage were in the same situation.                                                                                                                                                                                                                                                         |
| 91 | I live in an apartment building and it's hard for people to remember to put the garbage out every week. The garbage would smell and possibly not even be picked up regularly.                                                                                                                                                                                                          |
| 92 | Monthly fee reduction ?                                                                                                                                                                                                                                                                                                                                                                |
| 93 | if i miss my pick up - it would be 2 more weeks                                                                                                                                                                                                                                                                                                                                        |
| 94 | there are a lot of those reasons that apply. i would have picked several of them if i could.                                                                                                                                                                                                                                                                                           |
| 95 | Also very concerned about rodents. Already a problem.                                                                                                                                                                                                                                                                                                                                  |
| 96 | For me, every-other-wk pick-up would lead to an unpleasant build-up of dog excrement. If SPU could provide convenient alternative dog excrement disposal options,                                                                                                                                                                                                                      |

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|                                                                |    | every-other-week pick-up would be fine.                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                                                | 97 | I would support this only if recycling bins are picked up every week instead of every other as it is now.                                                                                                                                                                                                                                                                                                                                     |
|                                                                | 98 | I pay for the size of container that I need each week. It seems it would cost me the same amount for less service, perhaps even more because I would either need to pay for a larger container or there would be a fee for extra garbage.                                                                                                                                                                                                     |
|                                                                | 99 | I don't think it would be often enough.                                                                                                                                                                                                                                                                                                                                                                                                       |
| 14<br>Reason would oppose ban on food waste in garbage - Other | 1  | This is a crazy idea. I can't even take this seriously. Food waste IS garbage. I throw it out, and you take it away, that's the deal. Please figure out what you are doing with all the batteries and compact fluorescent bulbs that all end up in the garbage and/or recycling!                                                                                                                                                              |
|                                                                | 2  | We serve homeless women many who have mental illness - UNTREATED. This would be impossible to monitor and they or may not comply.                                                                                                                                                                                                                                                                                                             |
|                                                                | 3  | Where do you draw the line? It is subjective. Sometimes you have non-recyclable, non-compostable food containers and you don't get every last bit of food out. Seems like a hard call.                                                                                                                                                                                                                                                        |
|                                                                | 4  | i need my garbage to be picked up. sometimes food waste goes in the garbage and i should not have to sort thru my garbage nor should garbage pickup workers look thru my garbage. what is accomplished if the garbage is not picked up?                                                                                                                                                                                                       |
|                                                                | 5  | All of the above                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                | 6  | It would be nearly impossible for me to have 92 chronic alcoholics (residents) not put any food items in their garbage.                                                                                                                                                                                                                                                                                                                       |
|                                                                | 7  | Many of our tenants are dealing with mental health issues and have significant difficulty managing major aspects of their lives. Introducing recycling has been a challenge. Some appreciate the benefits and cooperate. Far more are not interested or able to sort recyclable waste. Separating food waste is will be an even harder sell and impossible to enforce without introducing the notion of garbage police which we can't afford. |
|                                                                | 8  | I would support this as a single-family home-owner. At work, overseeing multiple supportive homeless housing programs, I know that residents with significant barriers to housing would not have the capacity to sort through food waste. Penalizing housing providers would create unsanitary and unsafe conditions for these residents and staff.                                                                                           |
|                                                                | 9  | We just do not have enough ability to control our residents nor the person power to remove misdirected food.                                                                                                                                                                                                                                                                                                                                  |
|                                                                | 10 | All of my clients are seniors, many of whom have cognitive or vision problems. They may make every effort they can to place items in the correct container but MOST of my clients do not have "helpers" to help them do their chores, put in right place. I DO NOT want these seniors/disabled penalized for something like this, and this type of policy would put them at a significant disadvantage.                                       |
|                                                                | 11 | As a provider of low-income housing, there are many barriers to our residents fully embracing food waste separation (mental illness, language, etc.). I don't think our residents are ready (yet) to be required to separate food waste.                                                                                                                                                                                                      |
|                                                                | 12 | As a manager, it is hard to enforce families to follow the rule.                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                | 13 | Actually all of the above is best answer                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                                | 14 | We have tenants that are new immigrants from several different countries, cultures, etc. They have enough problems understanding the concept of recycling, how do you expect us to make sure there is no food waste in the garbage dumpsters??                                                                                                                                                                                                |
|                                                                | 15 | I can't control how my residents handle their garbage even after I have tried to educate them about how to dispose of it. This is a low income housing facility and additional expense from rejected pick ups would be a financial burden.                                                                                                                                                                                                    |
|                                                                | 16 | it will contaminate the organics stream since people with put questionable items in the organics bin                                                                                                                                                                                                                                                                                                                                          |
|                                                                | 17 | This was just one of my reasons; several apply.                                                                                                                                                                                                                                                                                                                                                                                               |
|                                                                | 18 | Legislating how we compost, recycle etc is getting out of hand.                                                                                                                                                                                                                                                                                                                                                                               |
|                                                                | 19 | All of the above. (I don't presently put meat waste in compost and I don't want to do this in the future.)                                                                                                                                                                                                                                                                                                                                    |
|                                                                | 20 | Occasionally there are food wastes that I need to dispose of that are not in an appropriate container to be put into yard waste.                                                                                                                                                                                                                                                                                                              |
|                                                                | 21 | seriously, spending money on garbage dissection is an insult to children and people in poverty... this is a waste of a resource... garbage inspectors. This is a sick way to spend govt money! Instead of inspecting for old thrown away food spend some money of fresh food in the many food deserts in this City! This is not a good use of tax payer money!!!!!!!!!!!!!!!!!!!!!!                                                           |
|                                                                | 22 | Food waste easily decomposes compared to plastics that aren't currently allowed but should be.                                                                                                                                                                                                                                                                                                                                                |
|                                                                | 23 | I'd like to see the great folks picking up my trash doing just that and not policing some city policy that makes Seattle feel good and green about themselves. Use these resource \$ on something around education, but not another silly trash 'law'. The solution is not in fining the offenders, it's in the education and then individuals opting to do that because it is best. Seattle is turning into yet another police state.        |
|                                                                | 24 | I support an incentive to not place food waste in the garbage container. Bans are costly to implement, and not very effective.                                                                                                                                                                                                                                                                                                                |
|                                                                | 25 | Sometimes it would require too many other resources to put food in the food waste bin - eg, discovering a container of gone-bad food that would require a huge amount of water to clean up, it seems less wasteful to throw it in the garbage than to process it for the food waste container                                                                                                                                                 |
|                                                                | 26 | There are times when I'm very busy that I dont get to emptying my food waste and then put some food in the garbage. Very seldom, and it would be terrible to have                                                                                                                                                                                                                                                                             |

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|    | to pay a fine when I'm doing a 95% good job of getting the food in the yard waste bin.                                                                                                                                                                                                                                                                                                                             |
| 27 | Also Government needs to stay out of people's personal lives.                                                                                                                                                                                                                                                                                                                                                      |
| 28 | some mixed food waste fails to meet recycling or compost standards so all yo have left is garbage or the idiotic task of washing garbage. need clearer rules and more inclusive sorting or leave things as they are. One arm of SPU tells me to conserve water and at the same time I am asked to wash my garbage.                                                                                                 |
| 29 | I love having food waste pickup and take full advantage of it so this wouldn't have much effect on me BUT this is a heavy handed idea that hits me all wrong. Also, when I have a house-sitter from outside the area sometimes they get confused by all the rules I've grown used to and they give up ... I don't want to be penalized for someone's simple mistake because the system is complex to a 'new user'. |
| 30 | I work in a university campus setting, where our utility budget pays the solid waste bills for our campus apartments. I definitely support reducing the amount of compostable and recyclable items in the trash, but in our situation, refusing to empty a bin or fining us would have little to no effect on the individuals responsible for the improper sorting.                                                |
| 31 | I THINK IT'S ABSURD THAT WE ARE FORCED TO PAY FOR THE YARD WASTE CONTAINER AS IT IS.                                                                                                                                                                                                                                                                                                                               |
| 32 | People walking down the street could put their food waste in anyone's garbage can - and that would trigger the "no pickup" penalty. Also I dislike the idea of garbage cops examining garbage for contraband peanut butter crusts.                                                                                                                                                                                 |
| 33 | WE HAVE ALWAYS COMPOSTED OUR OWN VEGETABLE WASTE. IT IS NOT FAIR TO FORCE US TO PAY MORE JUST BECAUSE WE OCCASIONALLY PUT MEAT SCRAPS IN THE GARBAGE, OR CONTAMINATED STYROFOAM MEAT TRAYS WE HAVE TO BUY FROM THE SUPERMARKET. OR, FOR THAT MATTER, MENSTRUAL-BLOOD CONTAMINATED WASTE, WHICH AMOUNTS TO THE SAME THING. WE ALREADY USE THE SMALLEST GARBAGE CAN AVAILABLE AND DON'T EVEN FILL THAT WEEKLY.       |
| 34 | Sometimes when I have spoiled food in a container I just want to throw it out without opening it. Every once in a while this should be OK.                                                                                                                                                                                                                                                                         |
| 35 | I will enjoy reading the media coverage on this if Conlin tries to make this happen. Again, I am politically active and often push the envelope. This will be a mess.                                                                                                                                                                                                                                              |
| 36 | We compost and have a compost cantianerin our kitchen that we bring to the outside bin for disposal. Though this is fine most of the year, it causes fruit flies in the summer, so we are less likely to compost in the summer.                                                                                                                                                                                    |
| 37 | Unable to use Food/Yard waste container because I am unable to clean it. If SPU offered to clean the container weekly, then I would consider using it weekly. I tried to use it when we first got it, but after a few weeks, I was afraid of bacteria and other pathogens that were growing in the food/yard waste container. It didn't seem healthy and safe.                                                     |
| 38 | In multi family residences it is extremely difficult to keep people from throwing inappropriate material into the wrong container. And we would need at least twice weekly pickup. And all of the above answers is the correct response.                                                                                                                                                                           |
| 39 | I mostly use the yard waste but every so often I make a mistake. Don't think it is fair.                                                                                                                                                                                                                                                                                                                           |
| 40 | Get citizens to comply through education and change, not in ways that shove penalties down their throats.                                                                                                                                                                                                                                                                                                          |
| 41 | Space to store a larger compost container is an issue as well. SPU is already too expensive!!                                                                                                                                                                                                                                                                                                                      |
| 42 | Enough with more rules already. We are adults, why treat us like we are children. If food gets mixed with garbage, deal with it. You've been dealing with it for decades now and things have worked out fine.                                                                                                                                                                                                      |
| 43 | Enforcement is simply not possible without a commesurate increase in waste processing costs to monitor and track compliance.                                                                                                                                                                                                                                                                                       |
| 44 | All of the reasons above other.                                                                                                                                                                                                                                                                                                                                                                                    |
| 45 | Accidents happen where food and glass/porcelain get mixed together. I would prefer to not have to put this into my home compost for safety reasons.                                                                                                                                                                                                                                                                |
| 46 | sometimes a plastic container gets stuck in the back of my refrigerator and gets pretty spoiled. the plastic can't be composted, and I just want to throw the whole container out.                                                                                                                                                                                                                                 |
| 47 | I'm concerned about the declining quality of Cedar Grove compost. I don't want to purchase a product to grow my veggies that contained possible pathogens, hormones, chemicals and antibiotics from animal products and the industrial junk that other people eat. However, I am in favor of reducing the burden on our landfills and understand your incentives.                                                  |
| 48 | I don't have yard waste container in addition to the garbage pick-upas I can not afford the cost.                                                                                                                                                                                                                                                                                                                  |
| 49 | Sometimes you can't help putting food waste in the garbage, e.g., the packaging is mixed up in it.                                                                                                                                                                                                                                                                                                                 |
| 50 | Mandating food composting would upset a lot of people. It's better to take a slower approach and use education to get people to start composting their food waste.                                                                                                                                                                                                                                                 |
| 51 | We all do the best we can. We certainly go out of way on a regular basis to be responsible in this regard. It would be highly frustrating to have my bin refused if on the off chance a relative or spouse made a mistake and dropped some food in the bin.                                                                                                                                                        |
| 52 | I don't need a "big brother"                                                                                                                                                                                                                                                                                                                                                                                       |
| 53 | I place a small aount of food in gargbage. Usually when food goes bad in the fridge & I don't want to deal with it and it's in a non-compostable container. I also don't like the idea of trash collectors going through my garbage. I've also been the victim of other people dumping in my garbage & getting a warning. I now put trash out in the AM, what a hassle.                                            |

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|                                                                            | 54 | Sometimes food waste can be too difficult to handle, for example a piece of meat that has gone too bad in the container. I'm not comfortable unwrapping and touching the soiled meat to separate it.                                                                                                                                                                                                                                                                                                                            |
|                                                                            | 55 | Sometimes it is too inconvenient for some people and you have had good saving with voluntary waste. Voluntary feels better than mandated.                                                                                                                                                                                                                                                                                                                                                                                       |
|                                                                            | 56 | I don't put much food waste in my garbage, but I do not put meat nor do I want to put meat products into the yard waste container.                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 57 | I am very diligent about putting food waste in the food/yard waste, however, there are times when it is not practical. For example, moldy food that affect my allergies if I attempt to separate and clean the components. I would be extremely disturbed if I did not have the option to discard in the garbage.                                                                                                                                                                                                               |
|                                                                            | 58 | As a homeowner, it is my judgement what is the best way to dispose of products                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                            | 59 | Sometimes separating food and garbage is difficult. In this case the food occasionally needs to go in the garbage.                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 60 | ACTUAL FOOD WASTE EXCLUDING PACKAGING DOES NOT HINDER THE LONG TERM HEALTH OF OUR ENVIRONMENT                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                            | 61 | Also, it's not the job of government to oversee one's refuse habits unless they are creating a public nuisance.                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                                            | 62 | Again, the majority of the reasons listed are valid. I think it is good to have a goal but really, to go to these lengths is government at its worst.                                                                                                                                                                                                                                                                                                                                                                           |
|                                                                            | 63 | Wow. Another really bad idea. It's already confusing as to which items need to be placed in which containers. Now you'd be punishing people for your poor planning? If garbage is not picked up, that could create a severe health hazard. We already have to go to the dump when we forget to put the can out. The whole thing just becomes ridiculous and people will start rebelling. People WANT to recycle. You should use the carrot instead of the stick, or you'll just make people angry and your plans will backfire. |
|                                                                            | 64 | Again, all of the above.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                                            | 65 | there are times when it may just have to happen -- even with the best sorting, etc                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 66 | Sometimes mixed food and glass or kids mess up                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                            | 67 | In San Francisco, there was a small compost bin provided by the city for apartment residents that we could keep under our sink. This would be the best option for the city to separate food waste. Everyone in San Fran used their small compost bins, and some even recycled it in small herb gardens. This is a nice way to get people to compost who live in apartments who would not otherwise do so. And the fact that the city provides the small compost bin is amazing.                                                 |
|                                                                            | 68 | It would be unfair to fine people for occasional food waste in garbage, since it is difficult to avoid all situations such as houseguests who are not familiar with the rules and occasional large amounts of fatty or greasy waste that is difficult to put in the yard waste bin.                                                                                                                                                                                                                                             |
|                                                                            | 69 | it seems like something that should be voluntary. seattle is a very eco-conscious city. why not encourage our citizens rather than force them? wouldn't that be a bigger win?                                                                                                                                                                                                                                                                                                                                                   |
|                                                                            | 70 | I personally love the current food waste program but on occasion a guest or child will throw food into our trash. If it wasn't collected, I would be very upset. It also seems to be a complete waste of time to be looking through everyone's trash and I have to believe that it would slow collections and increase costs.                                                                                                                                                                                                   |
|                                                                            | 71 | It's time-consuming for the collectors to inspect every can before dumping and while, slower, it is always better to convince/educate than to punish.                                                                                                                                                                                                                                                                                                                                                                           |
|                                                                            | 72 | difficult for older residence                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 16                                                                         | 1  | Focus on batteries, compact flourescent light bulbs in the trash/recycling.                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Reason for opposing requiring businesses to recycle more materials - Other | 2  | it would be better to implement a plan that encourages recycling by reducing garbage, thereby cutting costs for garbage collection. the plan should include strategies that make sorting these materials more convenient                                                                                                                                                                                                                                                                                                        |
|                                                                            | 3  | All of the above. I'm in favor of recycling. I'm not in favor of government legislation and enforcement of recycling.                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                                                            | 4  | Let's let businesses do business and not need follow another 'regulation'                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                                                            | 5  | Same reasons as before.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                                            | 6  | If businesses were fined, they would be forced to increase there cost to customers.                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                                                                            | 7  | One more government intrusion. We need to incent businesses to do this not require it. They need to see the benefit and not have goverment in their business more than it already is.                                                                                                                                                                                                                                                                                                                                           |
|                                                                            | 8  | I'm generally VERY supportive of this idea. But think it should focus on large businesses that can achieve some efficiencies. Seattle makes it very difficult for small businesses to be competitive. Don't add to their burden.                                                                                                                                                                                                                                                                                                |
| 18                                                                         | 1  | Batteries, compact flourescents are toxic. There is no way to dispose of them.                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Reason for opposing pet waste & diaper separate container - Other          | 2  | i don't believe disposable diapers should be added to compost. they are not biodegradable                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                                                            | 3  | all of the above reasons                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                                            | 4  | Don't the how "ask" is defined. Again, this would be almost impossible to enforce in our circumstances. Attaching any penalty to failure to do so would create significant hardship.                                                                                                                                                                                                                                                                                                                                            |
|                                                                            | 5  | All of the above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                                            | 6  | Are you serious? Would our trash collectors be required to monitor this too?                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                                                            | 7  | All of the top 8 reasons in the drop down box.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

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|                                | 8                                                                                                                                                                                                                                                                                                                                                                                                                             | Messy. Overreaching.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                | 9                                                                                                                                                                                                                                                                                                                                                                                                                             | Composting pet waste and diapers sounds disgusting. I don't want to separate into a special bin and I don't want to think about using the end product. Yuck.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                | 10                                                                                                                                                                                                                                                                                                                                                                                                                            | I do not want that compost circulated for sale or mixed with the current Cedar Grove compost.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                | 11                                                                                                                                                                                                                                                                                                                                                                                                                            | All of the above. And in a multi family residence it is too hard to enforce.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                | 12                                                                                                                                                                                                                                                                                                                                                                                                                            | Currently I would have only a little to but in there not enough to offset the expence of having a separate container picked up                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                                | 13                                                                                                                                                                                                                                                                                                                                                                                                                            | Having 4 separate bins in my garage seems a bit much. There just is not room.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                | 14                                                                                                                                                                                                                                                                                                                                                                                                                            | A fourth "can" is silly...we should put in with the yard waste.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                | 15                                                                                                                                                                                                                                                                                                                                                                                                                            | I would agree with this if the process was to be hassle free meaning that the bin and service would be initiated and provided by you at no extra cost.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                | 16                                                                                                                                                                                                                                                                                                                                                                                                                            | Diapers make sense, remember those day. Not enough volume in pet waste. People dump pet waste in trash or compostable (with correct bags) in the closest container when walking dogs making this worthless & vityally unenforceable. Go for the diapers!                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                | 17                                                                                                                                                                                                                                                                                                                                                                                                                            | Odors at processing facilities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                | 18                                                                                                                                                                                                                                                                                                                                                                                                                            | I don't understand how plastic bags and plastic diapers would be composted, and how the resulting composted product would be used/sold/applied.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                | 19                                                                                                                                                                                                                                                                                                                                                                                                                            | Stop making a confusing system even more confusing! You're going to get poor compliance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                | 20                                                                                                                                                                                                                                                                                                                                                                                                                            | Seriously, get real                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                | 21                                                                                                                                                                                                                                                                                                                                                                                                                            | Do do is picked up using plastic bags that can't be recycled. It would be a hassle to have smelling do do around as the crows get to it.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 19<br>Willing to do -<br>Other | 1                                                                                                                                                                                                                                                                                                                                                                                                                             | I would pay more if you had a plan to keep compact flourescent bulbs and batteries out of the garbage.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                | 2                                                                                                                                                                                                                                                                                                                                                                                                                             | Just a note that I already have a very small garbage container and have no pets/children, so those two options don't apply to me.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                | 3                                                                                                                                                                                                                                                                                                                                                                                                                             | I am often available to volunteer, please be in touch if an opportunity arises. Feel free to email me. <a href="mailto:scuttlebutt777@gmail.com">scuttlebutt777@gmail.com</a> Thanks Sarah :)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                | 4                                                                                                                                                                                                                                                                                                                                                                                                                             | buy unpackaged food, reduce junk mail                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                | 5                                                                                                                                                                                                                                                                                                                                                                                                                             | Grow My Own Food                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                                | 6                                                                                                                                                                                                                                                                                                                                                                                                                             | I favor the above as a home-owner. I would advocate that certain housing/service providers for vulnerable individuals, be given exceptions to requirements that couldn't be reasonably maintained.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                | 7                                                                                                                                                                                                                                                                                                                                                                                                                             | I'm very confuse about the whole process, need more education about it to help save us all.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                | 8                                                                                                                                                                                                                                                                                                                                                                                                                             | we do most of these already                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                | 9                                                                                                                                                                                                                                                                                                                                                                                                                             | Businesses should be encouraged/required to compost. I do all I can at home but work is another matter.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                | 10                                                                                                                                                                                                                                                                                                                                                                                                                            | Consume less overly packaged products, use reusable items, limit purchases of new items                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                | 11                                                                                                                                                                                                                                                                                                                                                                                                                            | I want my collection to stay the same.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                | 12                                                                                                                                                                                                                                                                                                                                                                                                                            | Would be willing to have bi-weekly garbage pickup if recyclables pickup is changed to weekly.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                | 13                                                                                                                                                                                                                                                                                                                                                                                                                            | If SPU would make available compostable bags, it would be easier to put runny kinds of food waste into the food waste cart. A container sized bag is probably unrealistic because limbs and twigs from yard waste could puncture it. Now I have the option of putting messy wastes into non-compostable or recyclable containers and tossing them in the trash. As presented, your plan appears to set a can't-win option where all soft, oozy waste has to go into the yard waste or one will be punished. I don't want to have to scrub my yard waste container every week, suffer odors and pests, or be penalized for putting food waste into plastic bags or other containers that are not compostable. |
|                                | 14                                                                                                                                                                                                                                                                                                                                                                                                                            | Thank you for looking into this!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                                | 15                                                                                                                                                                                                                                                                                                                                                                                                                            | Make manufacturers more responsible for their over the top, non recyclable packaging by taxing them on overpackaging.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                | 16                                                                                                                                                                                                                                                                                                                                                                                                                            | look at what is still going into the landfills, then encourage/require manufacturers to provide end-of-life-cycle plans for their products (electronics, furniture, construction, etc)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                | 17                                                                                                                                                                                                                                                                                                                                                                                                                            | I already have a micro can and recycle or compost everything I can so I can't really do more. If there were more opportunities to separate out more I would do it.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                | 18                                                                                                                                                                                                                                                                                                                                                                                                                            | We already compost most food waste by giving it to our chickens or putting in a worm bin.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 19                             | I don't actually know that I COULD increase my food and yard waste composting -- I think we do everything possible. But if there's more to be done, our household will gladly to it. And we're definitely in favor of separating pet waste. I've always been concerned about putting it in the garbage. I'm extremely impressed -- and proud! -- of the recycling programs we have in Seattle. Thank you for the work you do! |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 20                             | I am already a dedicated recycler, compost all our food and yard waste and have reduced my garbage can to the next to smallest size--partly to lower the expense. I guess it would be okay to have a slightly larger container if that would reduce the City's expenses.                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 21                             | I'm in favor of separating pet waste, but please consider that although I don't have a pet, I regularly pick up pet waste from my yard and parking strip. It's disgusting to have to pick up after other people's pets and it would bite big time if I had to pay an additional fee to dispose of it.                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 22                             | I'd love to be able to recycle styrofoam items.                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 23                             | Although supposedly required, apartment buildings do not offer composting (at least mine does not, and I don't see new bins near neighboring buildings). Please make                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

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|    | some phone calls to encourage building managers to participate!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 24 | Pay much more for garbage (and less for food/yard waste) to encourage reducing garbage.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 25 | promote food waste composting at businesses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 26 | Define "a little more on my monthly bill". I might or I might not. We're currently among the unemployed whose benefits have run out. We already have a small garbage can and compost food and yard waste extensively, so that would be difficult to increase further.                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 27 | I am waiting for Seattle to take action by issuing tickets for none compliance and to allow more garbage to be recycled (like solid Styrofoam, all plastic bags).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 28 | Can't afford any more bill increases - please understand that we are all struggling already.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 29 | We need more laws that prohibit packaging... this is the problem. All our focus should be on this!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 30 | I already compost almost all my food & yard waste.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 31 | I already compost all food and yard waste, and recycle everything I believe I possibly can. I can not reduce the size of my garbage container or pay more on my bill as that is handled by my landlord, who is also extremely conscientious about all of this. What I will do is make sure to encourage others to adopt practices similar to mine.                                                                                                                                                                                                                                                                                                                                             |
| 32 | Educate the community on using salvaged building materials and contributing to sustainability.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 33 | as an individual in the City of Seattle, I already have a small bin. I already purchase primarily bulk (non prepackaged foods). I am already taking part in living light, way before green became a marketing phrase. Just raise your prices if that's what you need to do, but if you really want to make a difference in waste, you need to go all the way to the beginning - where it all starts. To how as a culture we purchase items, how they are packaged. I've repeatedly seen City of Seattle do this - like with this garbage business. For example, the 'bag tax'. How does that even begin to solve the real issue? If you want to make the change, do it bigger and do it right. |
| 34 | I would be willing to do almost everything, as we are moving toward a Zero-Waste home. However, "Paying a little more on my monthly bill so that Seattle residents and business can do more to reduce waste and protect the environment" seems a bit vague, and I would need to see an explicit plan spelled out before I voted for a price increase. Also, there should be a monthly garbage pick-up option for a lower price.                                                                                                                                                                                                                                                                |
| 35 | I'm already putting tons of food and yard waste & recycling in the bins; I LOVE the idea of garbage every other week; would that also lower garbage costs?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 36 | We already have an aggressive composting & recycling plan for our family, I see no room to increase.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 37 | Dealing with food waste in the kitchen and yard waste bins is a huge sanitation nightmare. If a means of dealing with this sanitation issue could be found to make food waste composting easier and more sanitary, I would be all in favor of that.                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 38 | Require all multi-family units to have composting for pick-up. I currently live in a building of more than 10 units and we have no option but to throw our compostables in the trash.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 39 | Separate diapers/pet waste IF they could be placed inside plastic bags (not loose in the container)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 40 | I am doing all I can within the rules of the current program. expand what is allowed in recycling and composting and I can improve my participation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 41 | Reduce size of garbage container only if sizes of other containers increased                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 42 | I already compost all my own food and yard waste. Cost savings from biweekly garbage collection should only reduce garbage collection rates, not recycling & food & yard waste costs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 43 | i am not willing to pay MORE for LESS service. another typical example of "screw the residents of seattle!"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 44 | Most of what's in my garbage and recycle are wasteful packaging that I don't want/need in the first place. I would rather see the city put their efforts into reducing the stream before it gets to me instead of heavy handed options putting the burden on my for stuff I never wanted to bring home in the first place.                                                                                                                                                                                                                                                                                                                                                                     |
| 45 | We already do about everything possible. If stuff like, say, fish scraps/chicken skin etc goes in the yard waste the smells will be awful and the bins will need constant cleaning - wasting water!!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 46 | The ones I didn't select are the ones that don't apply to me, or I can't increase because I already do as much as I can.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 47 | I'd be happy to separate recyclable building materials (e.g. lumber, concrete, asphalt shingles) at the transfer station, too.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 48 | Now that glass is in the recycle bin instead of a separate bin, my recycle bin is full within a week. We are a 3 person household and we sometimes even physically "stomp" the recycling down to get more in the bin. The pickup every two weeks is annoying. I'd rather the garbage picked up less, and recycling more. But I do NOT want to pay MORE to have LESS pickups!                                                                                                                                                                                                                                                                                                                   |
| 49 | I would be in favor of every-other-week garbage pick-up if I was assured that the same volume of garbage per week would be the same cost.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 50 | We already have a small garbage can, and we compost food and yard waste. I recycle everything I can - but it would help if you would pick up recycling every week.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 51 | I THINK THAT WE AS A HOUSEHOLD ARE ALREADY DOING ALL WE CAN. CHARGING US MORE IN THIS ECONOMY IS VERY UNFAIR. IF YOU WOULD JUST ENFORCE THE EXISTING RULES FOR EVERYONE (E.G., APARTMENTS/CONDOS/BUSINESSES) AND NOT JUST SINGLE-FAMILY HOMES IT WOULD HELP.                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 52 | I am completely open to ideas here. I want to live in a city that is on the forefront of dealing with our waste, not on the tail end.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 53 | see previous comments about garbage collection size and less frequent pickups. I already do the other things you list (smallest garbage container, etc.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |



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| 54 | It would be wonderful if recycling were picked up weekly. As we recycle more, our bin is full long before the week 2 pick up.                                                                                                                                                                                                                                                                                                                                      |
| 55 | Some of those actions I am already doing.                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 56 | I feel like I already pay too much for garbage collection and our family only uses the smallest garbage container. That said, I love the idea of recycling and composting and we regularly do this.                                                                                                                                                                                                                                                                |
| 57 | If pet waste is separated from my garbage, I can reduce my container size or have my garbage collected every other week.                                                                                                                                                                                                                                                                                                                                           |
| 58 | Pick up recycling every week                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 59 | I already have smallest garbage container and am excellent at recycling everything and composting. I also use a Green Cone Food Digester for most of my food waste. I am an excellent example and wish others would do the same. No kids but if I had them I would use the no-diaper method of potty training.                                                                                                                                                     |
| 60 | Provide more tenant education about the benefits of recycling.                                                                                                                                                                                                                                                                                                                                                                                                     |
| 61 | Recycling pick up every week.                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 62 | It is nice that King County Metro has a garbage can at covered bus stops it would also be beneficial if there was a recycling option. More recycling options at Gas Stations and Stores. Food waste composting at Food Courts (in Malls) & restaurants. I would use all these options if available.                                                                                                                                                                |
| 63 | If you moved to every other week garbage, I might need a bigger container. I would also like to see recycling picked up every week - I often have more than will fit in my bin.                                                                                                                                                                                                                                                                                    |
| 64 | Collect recycling once a month. As it is, my bin is rarely more than half full and this dry, clean waste would cause no problem in being held over. Garbage can present problems.                                                                                                                                                                                                                                                                                  |
| 65 | We do most of the above and yet our bill keeps increasing.....so while we support the efforts there seems to be no incentive to do more in the way of cost savings past onto the customers who do there part - above and beyond.                                                                                                                                                                                                                                   |
| 66 | I already recycle and compost as much as I can; I'd LOVE to reduce my garbage pick-up to twice weekly.                                                                                                                                                                                                                                                                                                                                                             |
| 67 | Not certain what else I could do, already have the micro sized container and we put food scraps in yard waste container. Why not require businesses to recycle glass and aluminum since many do so already. The revenue from these high value materials should be collected.                                                                                                                                                                                       |
| 68 | Hire Stephanie Schwenger                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 69 | I would like ALL plastic bags to be put in recycling and ALL plastic containers and lids regardless of size to be put in recycling container. I am willing to pay more to have equipment used that would grade plastic and bags and sort accordingly. Way too much is still ending up in the garbage. Thank you for asking for my opinion. Julie                                                                                                                   |
| 70 | I feel like my family already does plenty. We follow all the rules that are already mandated.                                                                                                                                                                                                                                                                                                                                                                      |
| 71 | Willing to improve my fairly crude home composting if education and support were offered.                                                                                                                                                                                                                                                                                                                                                                          |
| 72 | I've requested that the city reduce the size our apartment's dumpster to a 96 gal container - we have yard-waste pickup, and don't need the whole dumpster. We were told we'd need a special inspection to get that. Other than that, I checked the above but mostly already do all I can, including shop at a co-op (which does composting, etc) and work in an office that not only has composting but also CFL, battery, cork, and small plastic lid recycling. |
| 73 | we already do the non-checked items (i.e. have the smallest garbage can possible, we compost much of our food waste directly into our yard, recycle everywhere, even bring things home when we can't recycle them where we are)                                                                                                                                                                                                                                    |
| 74 | I'm doing most of these already but think we should continue to do more. Reusable grocery bags should be mandatory, not something we vote on.                                                                                                                                                                                                                                                                                                                      |
| 75 | Require manufacturers to pay for & take back products                                                                                                                                                                                                                                                                                                                                                                                                              |
| 76 | I don;t know what more we could do than we are already doing - maybe some more education is needed.                                                                                                                                                                                                                                                                                                                                                                |
| 77 | I'm doing everything to reduce waste, recycle and compost as it is. Can't do more.                                                                                                                                                                                                                                                                                                                                                                                 |
| 78 | Have food and yard waste collection every other week instead of weekly pickup. Lower garbage rate if it's picked up every other week instead of weekly pickup.                                                                                                                                                                                                                                                                                                     |
| 79 | Would appreciate advice on handling pet waste                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 80 | Lockable containers. Something with a universal key so it can be unlocked for pickup, but would keep people from dropping dog poop or other garbage in one of my cans. My home does not have a secure place where I can store my cans like a garage and they can be accessed from the sidewalk. Dumping by people walking by and rental units into my cans (usually unsorted mixed garbage) is a weekly problem.                                                   |
| 81 | offer every other week garbage collection at a lower rate than weekly collection, as an financial incentive                                                                                                                                                                                                                                                                                                                                                        |
| 82 | I would gladly use a yard waste/food waste container of my own, in addition to my garbage container, if having the yard waste container did not cost more. Seeing as how the city is profiting from my yard waste/food waste buy selling it back as compost etc, you should give everyone in the city free yard waste & food waste containers                                                                                                                      |
| 83 | Separate diaper and pet waste - would that mean another truck? That seems wasteful for something that isn't at every house.                                                                                                                                                                                                                                                                                                                                        |
| 84 | Pay higher rates for garbage collection to reduce or eliminate rates on recycling and yard waste                                                                                                                                                                                                                                                                                                                                                                   |
| 85 | I already do everything.                                                                                                                                                                                                                                                                                                                                                                                                                                           |

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| 86  | Composting pet waste is a great idea; I'd be thrilled to see that happen.                                                                                                                                                                                                                                                                                                                                                                                                      |
| 87  | I already compost all my food waste at home and I recycle everything that is allowed to be recycled so I can't really increase my efforts.                                                                                                                                                                                                                                                                                                                                     |
| 88  | Use alternative fuels such as biodiesel, and eat locally grown whole foods.                                                                                                                                                                                                                                                                                                                                                                                                    |
| 89  | I don't see *anything* in the draft plan about reducing costs. This question is misleading.                                                                                                                                                                                                                                                                                                                                                                                    |
| 90  | Note: be very careful about enforcing certain proposed rules, such as no food waste in regular garbage. Suppose the food waste had gotten contaminated with something that really should not go in composting - the mixed waste should go in regular garbage, but someone in charge of enforcement might not realize that it was mixed waste and penalize the residence for putting food waste in the garbage.                                                                 |
| 91  | Feedback on survey: I would do a lot of these things if they applied. Why is there not an N/A option beside each of these? Thanks!                                                                                                                                                                                                                                                                                                                                             |
| 92  | We don't generate lost of trash but: Figure out how to recycle styrofoam & hard clamshell plastic packaging. Make battery recycling easier (we throw them away).                                                                                                                                                                                                                                                                                                               |
| 93  | spend more effort educating the rest of my family about appropriate waste management! and getting them to take out the garbage/compost/recycling!                                                                                                                                                                                                                                                                                                                              |
| 94  | I would choose every other week garbage collection IF I could have a larger recycling container & larger yard waste container at no additional cost.                                                                                                                                                                                                                                                                                                                           |
| 95  | We need weekly recycling pick-up! Our household recycles or composts most of our waste. Within a week the recycling can overfloweth.                                                                                                                                                                                                                                                                                                                                           |
| 96  | if we go to a every other week scenario, i have a problem. i pay for the smallest can size, but fill it up often. how would this work if picked up every two weeks - do we all need no larger cans? do we pay more?                                                                                                                                                                                                                                                            |
| 97  | We already do as much as we can to reduce waste by recycling and putting as much as we can into our yard waste containers.                                                                                                                                                                                                                                                                                                                                                     |
| 98  | im already a fanatic sorter                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 99  | I am very pro recycling. I've been doing it faithfully since the 1970s. It must be convenient if Seattle hopes to have full compliance. I don't think requiring separating pet waste will result in folks actually doing it consistently and may deter them from being good neighbors and picking up after their pets.                                                                                                                                                         |
| 100 | I feel like we do a pretty good job in our household with waste reduction. We use reuseable bags about 75% of the time.                                                                                                                                                                                                                                                                                                                                                        |
| 101 | My recycle only comes every two weeks. Mine and all of my neighbors are overflowing. all of the cardboard is sopping wet. You guys now want more authority to impose fines, provide less service considering we need better service and you want businesses and individuals to pay more for this moronic plan to reduce service in the name of being green. you people are out of control and this is why the tea party is so popular now.                                     |
| 102 | Become more efficient with SPU staff and reduce workforce                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 103 | GARBAGE BE COLLECTED IN A CENTRAL LOCATION BASED ON AN ACTUAL DISTANCE (0-5 MILES) OR ADDRESS (1700-1900) ALL DELIVER TO ONE LOCATION                                                                                                                                                                                                                                                                                                                                          |
| 104 | Diapers and animal waste are smelly. If the separate system was combined with the weekly compost pickup to could be okay. I usually keep it in an airtight container/bag so it would have to be okay to drp on the bags rather than just diapers and poop.                                                                                                                                                                                                                     |
| 105 | I have reduced my garbage container size and my yard and food waste container size, I recycle everything I possibly can and try to purchase things that do not create garbage. I do not appreciate being asked to pay more when I am already paying alot and reducing my usage. Lets stop asking for more and more from the citizenry and giving them less and less benefit.                                                                                                   |
| 106 | This survey indicates that you have a poor understanding of psychological motivation. People WANT to reduce waste and increase recycling. Threatening them with punishments that could cause health hazards because of small errors is just ludicrous. Instead, you should offer rewards for more recycling. Make it easier and less confusing to recycle (the instructions on the tops of the containers should be refreshed -- on ours you can'teven read what's allowable). |
| 107 | We already participate in recycling and have the smallest garbage bin available.                                                                                                                                                                                                                                                                                                                                                                                               |
| 108 | I have already been doing those things listed.                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 109 | Pick up my recycling weekly - it's overflowing even with 2 cans                                                                                                                                                                                                                                                                                                                                                                                                                |
| 110 | Require food waste composting in all residential buildings, including high rises!                                                                                                                                                                                                                                                                                                                                                                                              |
| 111 | We are doing plenty of recycling now. I do not want to be further regulated or have my costs increase to do more. I recycled before all the rules and will continue to do so.                                                                                                                                                                                                                                                                                                  |
| 112 | If the service were available, I would utilize recycling and composting bins at the businesses and restaurants that I patronize.                                                                                                                                                                                                                                                                                                                                               |
| 113 | I already do most of these things. I do not have babies or animals in my household, so I don't know how to rate the idea of separating that kind of waste from my garbage.                                                                                                                                                                                                                                                                                                     |
| 114 | I suggest charging more for garbage, and make composting "free", otherwise people don't do it and use their sink disposals or hide food waste in the garbage                                                                                                                                                                                                                                                                                                                   |
| 115 | My family is already doing a lot.                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 116 | I feel like we already do a good job of recycling at work and composting food/yard waste at home.                                                                                                                                                                                                                                                                                                                                                                              |
| 117 | I would be happy to compost food and yard waste if it were easier and cheaper to do so and to eliminate the cost of yardwaste pickup entirely from my bill.                                                                                                                                                                                                                                                                                                                    |
| 118 | Require recyclable packaging for all retail products.                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 119 | Some neighbors are placing their miscellaneous garbage/recycle items in our multi-family garbage containers.                                                                                                                                                                                                                                                                                                                                                                   |

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|                                                   | 120 | Strongly support open shop competition for waste disposal services to ensure that lowest cost, best value and customer service are provided to rate payers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                   | 121 | Separate plastic packaging from general waste                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                   | 122 | I have the smallest container and it never gets full, so I already think I pay to much for garbage, considering I could get one pick up per month. we recycle and compost heavily                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                   | 123 | educate others as to proper procedures. Many at my apt bldg are not cooperating. I am not sure if we have a compost bin??? I would like to compost food waste!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 20<br>What other input would you like to provide? | 1   | the rules about which plastics can be recycled seem to keep changing. this needs to be clarified.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                   | 2   | The visual charts that SPU provides showing what does where are great, but the fact that soiled food containers are in waste has always been confusing to me as it seems like they just need to be rinsed first (and are thus recyclable) instead of people real waste.                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                                   | 3   | Every compact flourescent, government mandated, light bulb is thrown into the trash. Also every battery, and television, and computer. Establish a seperate disposal service for these items, or you will be filling the earth with toxins                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                   | 4   | More education/outreach about compostable service ware items. Too many people are confused about this - I work in recycling/waste reduction and constantly hear from people believing they are doing the right thing by buying compostable items, but more often than not, they are not Cedar Grove-approved items. It's very confusing to people.                                                                                                                                                                                                                                                                                                                                         |
|                                                   | 5   | I manage 105 units and I have residents who speak different languages. It would be very helpful if recycling information was available in all languages.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                   | 6   | I guess I'd like to know what the tradeoffs are. In any of the scenarios, does my cost go down? Or does it only go up while what I have to remember to do also increases? It would be great if there were some other benefit to homeowners/consumers.                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                   | 7   | please don't increase the problems i have with processing, storing and hauling garbage by changing to biweekly pickups                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                                   | 8   | recycling should be free to small businesses. There are many times when I do throw away food in the garbage and that is because I would need to purchase eco bags and in the garbage the plastic bag suffices.                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                                                   | 9   | Equal access for waste reduction and recycling at low income neighborhood but education about reduction and recycling food and community engagement needs to occur first                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                   | 10  | I do not want to make the time to remember where each of my garbage items go. I pay a great deal of money to Seattle Utilities as is, and do not want to create more work for myself when it comes to tossing out my garbage.                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                   | 11  | Please provide financial support for the purchase of trash compactors to minimize the volume of waste to be collected as a supplement to efforts to recycle and generate compost                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                                   | 12  | Love several of these proposals for my family, but hope that exemptions for housing providers for vulnerable individuals will be made.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                                   | 13  | Provide more education to residents, families and children, how to sort, what should recycle, what not etc and what's the benefits?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                   | 14  | continue to provide creative flyers that help consumers figure out "what goes where". easier way to keep light bulbs, batteries, and pills out of the garbage stream.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                   | 15  | Keep in mind any changes that would be made and how those new requirements would impact those who are disabled or fixed/low income (if forced to pay more for additional services)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                   | 16  | Good job! You make it easy to do the right thing!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                   | 17  | Nothing at this time.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                   | 18  | I think my bill shold be lower if the garbage was picked up only twice a week                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                   | 19  | i live in highpoint and composting food waste is not an option. how is that possible if i live in seattle?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                   | 20  | My large tower apartment needs to enhance our abilty to compost by adding composting stations to each of the 32 floors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                                   | 21  | Be realistic about just how much tenants in multifamily properties are able to do.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                   | 22  | I have discovered at my residence in Burien that we are considered commercial at our condominium so Waste Management does not offer stand alone food waste service offered to single family homes due to the contract. i am in conversation with them to change this as condos and apartments are the biggest leverage for food waste diversion. I encourage seattle to look at this in your contract.                                                                                                                                                                                                                                                                                     |
|                                                   | 23  | take more responsibility for composting - solicit more processors to diversify                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                                                   | 24  | I work for a very small organization that does not produce enough food waste to pay for the composting service. If there is a community bin that we can put our composting in, we would happily compost what we DO produce.                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                   | 25  | no more plastic bags!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                   | 26  | I would like more simple informations regarding what is ok to place in food recycling bin such as containers, and should take plastic bags                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                   | 27  | I would like to see a more a la cart approach to collection, whereby the resident can select the frequency of collection for garbage and recycling totes (I think that organics carts should be collected every week, especially in summer, to avoid further increasing odor issues at the city's organic processor, though in winter collection could be every other week). For instance, as someone who lives alone and works full time my recycling and garbage can are almost always nearly empty on collection day. I could easily change my collection to once a month, given that all putrescibles go into my green can. This would cut costs for me, but also reduce the number of |

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|    | trucks on the road in turn reducing greenhouse gas emissions, pollution, etc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |
| 28 | weekly compost pickup!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |
| 29 | Continue, as apt. resident, to have separate bins for: recycling garbage food/yard waste                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
| 30 | Bi-weekly trash pick up is innovative, only it gets away from the public health aspects of waste management. A separate soils container for diapers, pet waste, and similar putrid materials could make this work. I am unhappy that the new blue recycling containers are smaller than the green ones still used for yard waste.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |
| 31 | Please keep costs down. I am already having problems keeping up with my utilities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |
| 32 | I applaud your efforts to reduce waste and increase recycling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |
| 33 | You all should pick up recycling every week. Our household has too much for every other week.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |
| 34 | If you haven't yet, read this book on choice architecture: "Nudge: Improving Decisions About Health, Wealth, and Happiness". If you don't make the preferred option easy nor make it the default, penalizing people for not complying is not the solution unless it's just to get the last few stragglers on board. Think "large carrot, small stick". Also, did you know that in Vienna they burn all their waste to generate hot water for district heating? And yet waste separation is still highly implemented by residents.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |
| 35 | Seattle Public Utilities should make available to the general public some type of power point presentation that captures all phases of their efforts relative to waste reduction. This tool should be free to residents and the business community of Seattle.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| 36 | Great work. Keep it up!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |
| 37 | I am recycling so much stuff now that my recycle bin is often very full after 2 weeks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 38 | You do a great job!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |
| 39 | I think Seattle is doing a great job. Thank you!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |
| 40 | 1). If garbage is only picked up every other week I would like to propose that a person does not get charged extra for an extra bag one or two times a year when they may have gone on a vacation and might have extra garbage on those occasions. 2). I would like to be able to "opt out" and have an option like the newspaper where I can have my delivery (garbage/recycle pickup) stopped while I am on a vacation and not be charged for that prearranged time. As it is now we try to encourage our neighbors to take full advantage of our empty containers while we are on vacation and ask them to go ahead and fill the containers because we will be charged if we use the pick up or not. Most of the time the containers just sit empty and we still get charged. 3) Thank you for including the waste motor oil pick up with the recycle pick up. We divide up the oil that we change from our vehicals into empty milk containers and put out our gallon of oil every two weeks and then it's just about time to change the oil again when we get to our last milk jug. |  |
| 41 | not sure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
| 42 | Nothing else at this time.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
| 43 | I put my containers out so that they are directly opposite the cans my neighbors across the street put out. It's maybe 40-50 feet from the entrance to my house is—where you might expect to see the cans. I do this because I think it makes it easier for the garbage handlers and it eliminates an additional stop. Encourage people who are able and inclined to try to 'group' or 'align' their cans with neighbors when possible to save time and fuel.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |
| 44 | You will need to push on apartments to get them on board to the composting. Still not being offered in downtown area.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 45 | Please RAISE garbage rates and correspondingly LOWER yard waste/recycling rates.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |
| 46 | keep up the good work! Make business recycling services similar to residential customers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |
| 47 | I'm really pleased about how much we recycle and compost.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |
| 48 | If garbage collect gets changed to every other week I expect the cost of garbage collection part of my utility bill to decrease, if it stays the same or increases I see no benefit to me.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
| 49 | One element that I thought was left unaddressed was furniture waste. After eliminating recyclables, C&D materials, and organics, furniture would be our largest stream of materials not already diverted. I'm not looking to see regulatory measures entertained before proper dialogue is started within the furniture manufacturing industry to "design for dis-assembly". Furniture should be easily and quickly disassembled into recyclable materials (fabric, wood, metals, and cushioning) specifically for reuse if we are every going to expect furniture to be recycled. The City could support commercial customers by advocating for such dis-assembly standards for manufacturers just like LEED has done for green building and Green Seal has done for paints and sealants.                                                                                                                                                                                                                                                                                               |  |
| 50 | It would be good to have compost receptacles in all public parks to help reduce food waste in the garbage.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
| 51 | I live at an apartment building in West Seattle. We only have recycling and no compost bins. When will all apartment buildings have the opportunity to do city composting?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
| 52 | This proposal to look through my garbage and pick up every other week is not a good idea. Having garbage sitting around for two weeks, possibly four is a health hazzard and potential temptation for rats and animals, creates more possibly for waste overflowing in the neighborhood. We pay plenty of taxes and fees-figure out a way to maintain service and serve the consumer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 53 | Suggest SPU pick up recycling every week.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |

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| 54 | We support your efforts 100% and will do whatever we can in terms of additional effort, separate disposal etc but can't sustain any more rate increases.                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 55 | I think it is a great goal but the packaging industry has to be regulated if we are ever to get control of this problem... it is not banana peels. Also, the construction industry is a one of the worst offenders and the waste off jobsite and chemical dumping into the ground as it relates to new construction needs a great deal of focus.                                                                                                                                                                                                                                |
| 56 | Work closer with manufacturing facilities to help with recycle.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 57 | Please make consistent rules about what goes in which container. It seems like different things go in different bins at work, home, & restaurants. It's too confusing, and hard to do it right.                                                                                                                                                                                                                                                                                                                                                                                 |
| 58 | keep up the GREAT work                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 59 | If possible, work with local companies and corporations to the extent possible to reduce packaging materials in general, and to use recycled, recyclable, and compostable materials in their packaging.                                                                                                                                                                                                                                                                                                                                                                         |
| 60 | Educate...educate...educate the community. Work with salvagers. Reduce our bills.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 61 | This is good work. Keep it up!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 62 | The small garbage cans (micro and mini square cans) don't seal well, which makes them smelly and more prone to getting bothered by pests like raccoons and rats. I'd also like to see more information on where to put plants with diseases or pests. Compost or trash?                                                                                                                                                                                                                                                                                                         |
| 63 | I would like to see recycling get picked up every week. I would rather have recycling picked up every week than garbage get picked up every week. Our recycling container is constantly filled and would like to have that taken on a more frequent basis                                                                                                                                                                                                                                                                                                                       |
| 64 | keep being innovative and doing such a great job; best city services for this I've ever seen. thanks!                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 65 | We're new to the city and have been frustrated by our efforts to dispose of meat & dairy food scraps in the yard waste because the city provided container is ancient and the plastic lid is so lightweight it's warped and won't seal out pests. A nice sturdy container like they provide for recycle would be more effective.                                                                                                                                                                                                                                                |
| 66 | 1. My apartment property manager has made no effort to provide composting, even though I've asked him. I'd love to see better outreach to apartment managers or some kind of requirement or something. 2. I'd like to see reuse- building supplies companies, Goodwill, etc.- be a big part of this mix.                                                                                                                                                                                                                                                                        |
| 67 | Make it more clear which items are recyclable based on the number on the recyclable material. Sometimes I am not sure if an item is recyclable or not.                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 68 | The cost for garbage/recycling/compost/yard waste pickup is pretty much maxed out in this economy. I am strongly opposed to an increased bill whatever decisions you do make.                                                                                                                                                                                                                                                                                                                                                                                                   |
| 69 | Don't do anything too drastic like threatening fines. Make it easier to compost, recycle, etc. We find our recycling bin too small sometimes even for weekly pick up, but are hesitant to put out paper bags in the rain. It would be great if broken recycling bins could be replaced more regularly.                                                                                                                                                                                                                                                                          |
| 70 | Require multi-family housing units to have composting cans.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 71 | The amount of food waste my family produces is very little. We don't have room under the kitchen sink for another waste receptacle (we already have 3). Having garbage collected every other week would be a huge inconvenience for many reasons.                                                                                                                                                                                                                                                                                                                               |
| 72 | Would like to put more in my recycling bin, either by having an additional container, larger container, or more frequent pickups.                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 73 | Personally I believe the whole what waste goes into what container is getting way too complicated. Whatever you do needs to be simple and very, very easy to understand.                                                                                                                                                                                                                                                                                                                                                                                                        |
| 74 | The older I get, the harder it is to roll the bins out to the curb. The idea that there is a double standard of service for those with alley access vs those of us without is also a limiting factor in participation. THE bins are not large enough to take all of the material and at the same time are too heavy to easily move.                                                                                                                                                                                                                                             |
| 75 | I AM VERY HAPPY WITH OUR CURRENT GARBAGE/RECYCLING/YARD WASTE PROGRAMS. WE ARE AMAZED AT HOW LITTLE GARBAGE WE CREATE. KEEP UP THE GOOD WORK!                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 76 | Please switch to every other week garbage - I have smallest container and already only need to have it emptied once or twice a month. Would love an option to decrease collection and save everyone money.                                                                                                                                                                                                                                                                                                                                                                      |
| 77 | Leave service as is. It is already very advanced in the US, and more steps will make it worse. None of this creates jobs or helps the economy. Fewer rules are easier to follow.                                                                                                                                                                                                                                                                                                                                                                                                |
| 78 | i currently pay a large amount for water, sewer, garbage and yard waste. with the economy in the shape that it's in, for seattle to raise rates at this time is just another kick in the pants for residents. i'm getting sick of living in the city limits for this reason.                                                                                                                                                                                                                                                                                                    |
| 79 | SPU rates already seem way too high to me - future 'enhanced' options should not be forced on us until rates come down or the new options can be provided for the current rate.                                                                                                                                                                                                                                                                                                                                                                                                 |
| 80 | Because changes to solid waste requirements involve a lot of infrastructure changes in a campus setting, I would really appreciate having more advance notice of the new requirements or having a contact at the city to work through these with. I do believe notices went out, but they may have reached the incorrect person on our campus. As a result, I had less than two months to create an apartment composting program for our campus. It's something I'm glad is happening, I've been arguing for it for awhile, but I wish I'd known about the deadlines earlier... |
| 81 | I currently have a micro-can for garbage, the smallest size you can get, and I only fill a fraction of it. I would love to have the option an even smaller size. Also, the                                                                                                                                                                                                                                                                                                                                                                                                      |

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|     |  | lid on the micro-can is really hard to get off. It needs a better design!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |
| 82  |  | I liked the description of separating concrete, asphalt shingles, etc. from garbage at the transfer station, but I would still need to take it to the transfer station - e.g., I wouldn't be able to figure out how to recycle concrete on my own.                                                                                                                                                                                                                                                                                                                                                                                                                         |  |
| 83  |  | More needs to be done to reduce waste and promote product stewardship.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |
| 84  |  | you should increase the enforcement of all of these bans you have in place. There's nothing like a \$100 fine to change the way people do things.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |
| 85  |  | There should be a bigger fine for littering. Those funds could be applied to help reduce overall waste in Seattle.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |
| 86  |  | Pick up recycling weekly. Simplify the rules about what is and is not recyclable and what food stained material is - for example I don't know what to do with my dog food sacks - they are paper, but they've held dog kibble which is a little bit greasy on the paper.                                                                                                                                                                                                                                                                                                                                                                                                   |  |
| 87  |  | THINK SERIOUSLY ABOUT A TRASH INCINERATOR, OR RECYCLING ITEMS WE CURRENTLY CAN'T RECYCLE SUCH AS LIDS, BOTTLE CAPS, ETC.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |
| 88  |  | Expect it, demand it, punish if it is not done. Don't worry so much, just move forward and show the rest of the nation how it is done. I am totally on board.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |
| 89  |  | If my overall monthly rate didn't increase and the volume of trash I could dispose of remained the same, that would be okay. Shoreline had the option of a 32gal trash container w/ monthly pickup and I loved it. Unless I had to miss a pickup week, then I was screwed.                                                                                                                                                                                                                                                                                                                                                                                                 |  |
| 90  |  | Thank you for your efforts. I know that compared to many other cities in the country - and even the state - we are way ahead of the game. Your efforts are greatly appreciated!!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| 91  |  | The notion of garbage pick up every 2 weeks instead of weekly is disturbing. If that happens, our garbage rates should be cut in half. Our garbage and utility rates are already excessive, and it doesn't make sense to hit homeowners when there are many measures that businesses could take to further reduce waste and increase recycling. Many eateries downtown do not offer recycling - increase enforcement of those establishments as a first priority.                                                                                                                                                                                                          |  |
| 92  |  | SPU is doing a fantastic job--please keep up the great work. We're very far ahead of the curve here in Seattle in terms of being able to recycle practically everything. My only thought would be to be able to recycle more plastic bags other than just grocery shopping bags.                                                                                                                                                                                                                                                                                                                                                                                           |  |
| 93  |  | It would be wonderful if recycling were picked up weekly, as if yard waste, while garbage was picked up every other week. As we recycle and compost more and more, the garbage can is mostly empty each week, while the recycling is often full within 8-10 days. Alternatively, perhaps we could use a larger recycling bin, closer to the 96-gallon size? If weekly collection is cost prohibitive, we're happy to put extra recycling in other bins and/or bags, but the garbage folks often pick them up instead of the recycling folks. Thank you for all of your hard work!                                                                                          |  |
| 94  |  | Keep leading the way!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |
| 95  |  | like the food composting service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| 96  |  | I think SPU does a great job at encouraging waste reduction, recycling and composting and providing appropriate programs. We need to get other major cities to join in!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 97  |  | Asking for the type of garbage people throw away may be helpful info on this survey.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |
| 98  |  | I appreciate the way the system works now. SPU has made it easy to recycle (no sorting!) and compost (nearly all food scraps are compostable now). Because of these changes, we were able to reduce the size of our garbage bin. However, its still complicated trying to explain all the rules to new residents in our building, or to keep the neighbors from dumping illegally in our bins.                                                                                                                                                                                                                                                                             |  |
| 99  |  | Garbage pick up every other week is a great idea!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |
| 100 |  | Figure out how to reduce packaging in the first place so we don't have so much recycling to deal with.<br><br>No more Styrofoam packing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |
| 101 |  | Our recycling bin is actually our fullest one. I'd rather that get picked up every week, and the other two go to bimonthly instead, except for yard waste in the Spring, Summer, and Fall. At those times of the year, it gets full quite quickly.                                                                                                                                                                                                                                                                                                                                                                                                                         |  |
| 102 |  | Pick up recycling every week                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
| 103 |  | Packaging produces so much waste. We must change our processes on every level. Keep up the good work!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |
| 104 |  | The diaper and animal waste recycle is an excellent and needed service. People who don't recycle should be fined.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |
| 105 |  | Food composting in condo buildings is not practical. Let alone a separate bin for pet waste and diapers. There is no place that is isolated that would allow this type of waste not to impose on others. We already have bin storage challenges for recycling containers. Also, strong odors would affect many garage stall owners/parkers. Plus, many residents are renters and they don't share the same sense of pride for ensuring that recycling is kept in recycling containers and food in food waste containers, etc. While I'm happy to recycle cardboard, plastics, cans, etc food and other smelly material presents unique challenges in multi unit dwellings. |  |
| 106 |  | recycling needs to be picked up EVERY week or offer larger storage containers. My recycling was replaced with a smaller bin but pickup times were not increased..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |
| 107 |  | Work harder to get Seattle Housing Authority building managers to manage their waste better. They have chronic over flowing garbage, waste containers blocking sidewalks and birds and rats spreading garbage around North Delridge Neighborhood. Please look into this. Thank you.                                                                                                                                                                                                                                                                                                                                                                                        |  |
| 108 |  | Tenants don't always care about separating garbage from food/yard waste. Compelling them to cooperate is difficult.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |

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| 109 | I would love to be able to compost my Good Mews Cat Litter through city composting. I think including this in a compost plan and encouraging residents to use approved compostable litters would be an amazing addition current service. Currently cat waste and litter makes up the bulk of our garbage. If we were able to compost them through the city, it would be easy to keep the same size garbage can and have pick up happen every 2 weeks, or reduce the size of the can and have it picked up once a week.                                                                                                                                                                                                                 |
| 110 | Recycle containers in parks.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 111 | Provide reduced cost food waste containers (with air filters) for inside the home.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 112 | I would like to emphasize the need for assistance in cleaning food waste containers. The bacteria, smell and other pathogens makes it difficult to use. Without a location to clean the container, I am unable to use it... but I am required to pay for it (very unhappy about this).                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 113 | Appreciate the hard work so far and I know we are way ahead of other cities and it is one of hte reasons I am proud to live in Seattle. Bring us more ways we can be cutting edge!!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 114 | We are pleased with the effort so far. Garbage bill reduced by a third because of separate recycling. In multi family residences (116 units in my case) it is hard keeping garbage out of recycle and vice versa. I am NOT going through food waste bins to remove plastic and other forbidden material. In single family residences your proposals make a lot of sense. For multi family residences and even some shared business buildings these proposals are not practical. One bin for recycle and another for all else is about as good a compliance as is practical.                                                                                                                                                            |
| 115 | I find that recycling comes down to an individual basis. we have recycling dumpsters 100 feet from our shop and people still throw metal, wood, or paper in the garbage cans. if 100% of people recycled the the increase would greatly increase. It seams like only a small % recycle at my shop.                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 116 | Some hands-O                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 117 | As I said in the previous page, picking up recycling every week would be helpful.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 118 | Businesses should have the same rules as private homes for recycling, food, waste and garbage disposal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 119 | Reduce prices for clean green, increase prices for garbage collection.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 120 | The company that is currently collecting in my neighborhood is doing a very good job, much better than the previous contract.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 121 | Need to make sure food waste is picked up every week - we were recently skipped for some reason and had a problem with maggots and flies, not so great.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 122 | Produce real-world examples that scientifically prove the benefits of each of these activities and present them to the public. Our industrial, quick-fix society has been a bit too attractive, but needs to change.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 123 | Compostable take out containers seem to be more widely used, but they seem to wind up in the regular garbage even when they are taken home. More outreach may be necessary.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 124 | Purchase garage cans that last longer, which should have replacement costs of cheaper made cans.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 125 | You should hire Stephanie Schwenger.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 126 | I don't usually fill up the regular recycling container (bottles, cardboard, paper) because I already buy items with little packaging. However, since you cannot opt for a smaller recycling container, I have to use one that is too big for my space, and is ugly. I think the containers should look better and we should be able to choose between at least 2 sizes to be able to accomodate homeowners.                                                                                                                                                                                                                                                                                                                           |
| 127 | Seattle must work toward more recycling of waste and less in the landfills even if it costs the taxpayers more per month.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 128 | Right now you only pick up recycling every other week but because of the amount we recycle, we find that we need a weekly service. I'd love to see recycling become a weekly service and garbage pickup change to every other week.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 129 | It would be nice if those of us who compost at home, not using the yard waste pickup were rewarded with reduced rates. It seems like businesses, particularly restaurants, should be required to do much more - they generate a lot of easily recycled bottles and compostable food scraps.                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 130 | Very happy with how you keep trying to find more ways to reduce every year. Love the ability to put food waste into Yard Waste.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 131 | Need more businesses to participate in food recycling. I work for the city in another building other than the CMT and there is no service.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 132 | SPU is expensive, no more fees please!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 133 | Even with a small family, the new recycling containers cannot accomodate all of our bi-weekly materials.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 134 | Perhaps more visible information about how recycling, composting and waste reduction could save people money so that more people in my condo would do it. Encourage businesses (fast food, coffee shops, yogurt stands, etc.) to make plastic-ware and disposable cups optional. If people could be encouraged to carry their own utensils and water bottles so that they wouldn't keep having to use new plastic ones each time they get something to go. And just like at Starbucks, if fast food places gave the option of filling up a water bottle/thermos with soda if people so chose. If more stores provided bulk food/supply options for us to bring our own containers for laundry and liquid soap, shampoo, pet food, etc. |
| 135 | Recycle pick up weekly.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 136 | Education needs to be done to let people know they can't put plastic bags with food into the compost green bin!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 137 | The requirement that condos/apartments must start composting doesn't make sense to me. Several of the older buildings have no space for more bins and the waste                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

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|     |  | from buildings of 50+ units really stinks. If those people who make up these rules lived in such a setting, they would not come up with these user unfriendly rules.                                                                                                                                                                                                                                                                                                                                  |  |
| 138 |  | We cannot afford higher costs, induced by having to implement new containers.                                                                                                                                                                                                                                                                                                                                                                                                                         |  |
| 139 |  | It is sometimes difficult to go through the garbage container and separate things (especially old food) into the yard waste, recycling and trash. I mostly do it, but it's kind of unpleasant. I'd like someone (???) to think up a neat way to keep all that stuff separate when when I'm in the house rather than standing outside at the containers.                                                                                                                                               |  |
| 140 |  | I just love the food composting changes made over the last couple of years. I can't believe how drastically it has reduced the amount of garbage we generate.                                                                                                                                                                                                                                                                                                                                         |  |
| 141 |  | You are wasting time and tax payer money trying to force people to recycle. You need to better manage what you already have instead of wasting our tax dollars trying to force people to recycle.                                                                                                                                                                                                                                                                                                     |  |
| 142 |  | Recycling should not be every other week. It should be weekly. We recycle most of our items and completely fill our container every week. Waiting two weeks does not promote better recycling habits.                                                                                                                                                                                                                                                                                                 |  |
| 143 |  | Keep up the good work, keep pushing the envelope. We need it.                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |
| 144 |  | The gross abusers are in the commercial sector: restaurants, construction, manufacturing. The real savings are commercial, not residential. Residentially speaking, multifamily diversion is quite low. Coming up with a plan to solve the MF problem is important, but without direct incentives to the tenants, there is little reason for them to "do the right thing" under already tough conditions (not enough space, no compost can, etc.) Homeowners are doing a pretty good job, in general. |  |
| 145 |  | Consider weekly recycling. We can easily make weekly recycling work.                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |
| 146 |  | Couldn't you use trucks or pick up routing that is more efficient?                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 147 |  | You do good work. Thank you!!!!                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |
| 148 |  | Requirement apartments to have food and yard recycle pickup.                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |
| 149 |  | Please read my comments on compost. The same holds true for general recycling. I appreciate your desire to increase participation by making it easier for residents (combining glass with other materials), but I'm concerned about the quality of the paper and plastic products (contamination). As an entrepreneur looking to use recycled materials, I'm finding a great reluctance among manufacturers due to quality issues.                                                                    |  |
| 150 |  | I think if you cut to every other week services the costs for those services should drop in half. It's also harder to remember which week is pickup week.                                                                                                                                                                                                                                                                                                                                             |  |
| 151 |  | Educate the masses, start with the young.                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |
| 152 |  | I have a 96 gal. recycle bin. Because I produce little trash, I have not had to set it out since early July. I have seen a few very small recycle bins but upon calling the customer service number I have been told only disabled people are allowed to use them. I would really prefer the smaller footprint of the small can and I think it shows a visual cue that people not only can reduce landfill waste but also recycle waste.                                                              |  |
| 153 |  | The trucks are noisy. I live on 25th NE, where garbage/yard/recycling is collected on Monday:west side, Tuesday:east side. Two days of noise is too much. Please collect one day only per street.                                                                                                                                                                                                                                                                                                     |  |
| 154 |  | The guys that collect our stuff are great. They're really good. I have no complaints. Seems like they work hard and do it right. Thanks for the great service.                                                                                                                                                                                                                                                                                                                                        |  |
| 155 |  | RAISE garbage collection rates LOWER yard/food/composte collection rates                                                                                                                                                                                                                                                                                                                                                                                                                              |  |
| 156 |  | My law firm located downtown makes an effort to separate food waste, aluminum/glass and paper, yet compliance seems to be low. Maybe the city could help businesses with signage for the various containers and otherwise assist with education (and incentivizing) workers (who may come from outside city limits and not be familiar with the rules)                                                                                                                                                |  |
| 157 |  | Food waste exists every week, however, yard waste may not. Large yard waste bin is too large for small amount of food waste.                                                                                                                                                                                                                                                                                                                                                                          |  |
| 158 |  | 1. increase size of recycling containers so no need for extra bags or boxes of recyclables which end up getting wet when it is raining or flying around if it is windy<br>2. have recycling container be a different color from the yard waste container                                                                                                                                                                                                                                              |  |
| 159 |  | I really appreciate your recycling efforts.                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| 160 |  | We should be allowed to reduce the size of our yard waste/food waste can more than once a year -- much smaller container needed during winter months when there is no yard waste.                                                                                                                                                                                                                                                                                                                     |  |
| 161 |  | I stayed with a relative in San Jose, CA and they could put virtually everything in recycling, clothes, wood, all containers. It seemed like everything. Why can't we?                                                                                                                                                                                                                                                                                                                                |  |
| 162 |  | our recycling is picked up every other week. It is full by the end of the week. I think we already have the largest container and don't have room for a second.                                                                                                                                                                                                                                                                                                                                       |  |
| 163 |  | For me the best next step would be the recycling of solid pieces of Styrofoam. Current choices are garbage or a long driver to Renton (requiring a car).                                                                                                                                                                                                                                                                                                                                              |  |
| 164 |  | Recycling should be picked up on a 'weekly' basis.                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 165 |  | There is a disconnect between the Seattle City Council and SPU. For example, the City recently required businesses to use recyclable packaging for food containers. However, the numbers I see on the raw meet packaging are unreadable, plus I have not seen any educational material on what to do with it.                                                                                                                                                                                         |  |
| 166 |  | I would support raising the rates for trash service to encourage more households and businesses to recycle and to compost food waste. If it was even more expensive to throw it away, more people would start using the other cans.                                                                                                                                                                                                                                                                   |  |
| 167 |  | In my opinion, making recycling accessible to people and providing education is more effective than penalizing the public with fees, fines or refusals.                                                                                                                                                                                                                                                                                                                                               |  |



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| 168 | Food recycling is a great program and has helped us reduce alot. We recycle/ reuse as much as possible now, but this is the biggest impact.                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 169 | Garbage reduction should be associated with reduced costs, not increased costs as proposed in the draft plan.                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 170 | I would like recycling to pick up every week.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 171 | Since I live in a multifamily building, I don't have yard waste & i don't have kids or pets so disposing of that waste also is not an issue for me. If I lived in a SF home, I'd be willing to have a smaller container picked up less frequently, but it's really not feasible for my building of ~100 residents.                                                                                                                                                                                                                                                |
| 172 | we have 2 recycling bins which is really helpful. i think it should be advertised more that you can get another recycling bin for free                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 173 | Not satisfied with current waste management subcontract for business/commercial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 174 | It is not possible to separate every scrap of food to go into the food waste bin. And there will be plastic bags and other items that have some food scraps. We only have dog waste occasionally - i do not want to maintain a separate garbage for when our daughters' bring a pet. I think every week pick up of garbage is what a civilized city should provide. we have a medium waste can now. Occasionally we have more than will fit. With every other week we would have to increase the size, but not need it half of the time. Leave well enough alone. |
| 175 | Please do not change the garbage collection schedule to every other week. Everyone's garbage will overflow, creating lots of litter. People will not want to pay for larger garbage containers, and they don't have room for them.                                                                                                                                                                                                                                                                                                                                |
| 176 | 1) I'd like occasional e-newsletters to remind me about all the rules about what is recyclable. Even though I've been doing it for years, I still get confused about what types of plastics are recyclable. 2) An incentive program for people or n'hoods who decrease garbage and/or increase recycling. Might be fun to have a competition by block or n'hood on who produces the least amount of garbage - similar to City Light's OPower energy-use letters. Use BlockWatch captains as organizers.                                                           |
| 177 | I'd be willing to separate pet waste and diaper waste if it didn't cost more on my monthly bill.                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 178 | I do not want to pay more for services. The economy is bad enough yet costs continue to rise. I currently use the smallest containers you offer. Stop raising rates!                                                                                                                                                                                                                                                                                                                                                                                              |
| 179 | Every other week pickup would make me increase the size of my garbage container which I do not have room for. I would more pick up in public places, i.e. parks, downtown, Madison Park...garbage is often overflowing in public places.                                                                                                                                                                                                                                                                                                                          |
| 180 | I am concerned the question about every other week pickup is confusing. I believe you mean that weekly yard and food waste pickup would continue, and only garbage pickup would be less frequent.                                                                                                                                                                                                                                                                                                                                                                 |
| 181 | Currently, SPU only picks up recycling every other week. We have so much recycling that commonly our can is overflowing, and we have a lot of cardboard and other recyclables littering the side of our house. I am afraid if SPU reduces its garbage pick up to every other week as well, then we will have constantly overflowing garbage. This is extremely unsanitary.                                                                                                                                                                                        |
| 182 | i already am an avid recycler and food composter, but i do not like it being mandatory.                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 183 | I love the recycling, yard waste & composting options you have provided -- I just wish that recycling could be bumped up to every week -- then reducing the garbage pickup would work great for our family!                                                                                                                                                                                                                                                                                                                                                       |
| 184 | Weekly recycling pick-up and garbage pick-up every two weeks would better reflect this household's needs.                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 185 | No, our cvity does enough. The City is obsessed with garbage, and just leave residents as is, and focus on commercial operations. There is no room for more garbage cans in Seattle old neighborhoods, and there are many people who cannot lift these containers to curb. Once a week pick up is essential.                                                                                                                                                                                                                                                      |
| 186 | we more often fill up our recycling and often have overflow on the every other week pickup...                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 187 | we need recycle bins at bus stops. my bus stop trash is mostly recyclables                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 188 | Allowing all recycled materials in one bin was a great innovation and helps compliance immensely. The north transfer station should be renamed as the J.P. Patches City Dump.                                                                                                                                                                                                                                                                                                                                                                                     |
| 189 | I love the flyers we get with pictures about what goes where. I don't think apartment residents get those. I also wish there were more opportunities to recycle in public places. I think there needs to be an educational marketing push about why it matters to recycle and compost.                                                                                                                                                                                                                                                                            |
| 190 | you fine us for having recycling in our garbage cans but you only pick it up once every two weeks. i have to drive multiple bags of cans and bottles to my work and throw it in the3 dumpster. great thinking to now further reduce the services and get us to work harder and pay more in the name of the environment. less regulation, more service. every though of that?                                                                                                                                                                                      |
| 191 | More recycling pick ups... My recycling over flows                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 192 | It would be great to have more recycling containers in public areas, not just waste receptacles. Education/signage is needed also, so often people are placing items in the wrong containers. Lazy? Unaware? Who knows!                                                                                                                                                                                                                                                                                                                                           |
| 193 | SPU needs to consider that by generating a food waste compost market will generate an increase in processing facilities and the need to locate those facilities close to the market. If SPU promotes diaper and pet waste composting, a facility would be needed which would concentrate odors in a location. Plan for the consequences of your actions and regulations.                                                                                                                                                                                          |
| 194 | We rarely use our garbage micro can - there's always enough room for our small trash bag in our neighbors' larger can. Would be nice to be able to pay for one                                                                                                                                                                                                                                                                                                                                                                                                    |

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|     | joint garbage receptacle. Right now we have so many recycling/food and yard waste and garbage receptacles for our 3 townhouses - makes for an ugly crowded storage area and we have limited space as it is!                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 195 | Residential garbage collection city wide, seems to be going well. However the garbage for businesses/restaurants seems always be overflowing. If there a way to create more regular dumpster pick up for high use areas?                                                                                                                                                                                                                                                                                                                                                                                                          |
| 196 | ENCOURAGE AND TEACH PEOPLE TO COMPOST ON THERE OWN.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 197 | We are already one of the top recycler/composter cities in the country - to put a further cost or punitive burden on the end-user would be nonsensical.                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 198 | It seems like most of the remaining garbage after recycling and composting is plastic that could be cleanly burned. Can this be done safely?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 199 | If you want us to recycle more, then you need to give us larger recycle carts. Our recycle cart is always so full by pick-up, we usually can't fit in any additional items and end-up placing them in our garbage cart.                                                                                                                                                                                                                                                                                                                                                                                                           |
| 200 | I would like to see recycling picked up every week. Even with a very large bin, it piles up and if you miss the pick-up, it's forever until you can deal with the accumulation, especially after large events and house moves.                                                                                                                                                                                                                                                                                                                                                                                                    |
| 201 | I would request that the pick up people try not to spread recycling all over my street. I make a concerted effort to do the right thing. The least they could do is put the receptical back in the proper place and not in the center of the sidewalk where pedestrians have to avoid it for the entire day, as I work. Also, put the lid on particularly when it rains. It isn't hard to do and keeps it from filling up with water. I like the effort being made but I think a soft pedal is called for. Showing the public the benefit of recycling is better than using "requiring" tactics makes the effort more palatable.  |
| 202 | Pick up paper / plastic / cans / glass recycling containers weekly.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 203 | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 204 | Make the system easier to understand, and reward people for complying rather than punishing them for small mistakes. For example, simply by putting fresh stickers on all the containers, you'd probably get better compliance right there. Some people probably just don't know what goes in what container. Also, each container should be a different color. The two of the same color are confusing. Finally, everything should be picked up EVERY week. I can never remember which week is the recycling pickup. Every other week is a terrible way to pick up anything because it's human nature to forget the "other" day. |
| 205 | Already putting about all yard and kitchen waste into collection containers-doubt I could do more in that area-don't do my own composting at home any more. Would want to keep garbage container at current size if p/u changes to every other week. Composting and recycling rates still really suck in break areas at work. We sort things pretty well at our home, but seems folks struggle to do so at work and in restaurants. We do have a lot of pet waste going into garbage now. Would be good to address that.                                                                                                          |
| 206 | I would like to have recycling picked up every week.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 207 | Keep up the good work. I'm so proud of our city for this.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 208 | I believe the city is doing a great job with waste reduction but should impose tiered penalties on those who don't recycle.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 209 | I feel we are paying too much already for a service That is becoming less beneficial for the customer with Questionable benefits. We should be holding costs down rather than increasing rates and reducing service.....which seems like the next act of this survey.                                                                                                                                                                                                                                                                                                                                                             |
| 210 | It must be convenient or it won't be used.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 211 | Thank you for asking for our input!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 212 | We have racoons in our garbage weekly. We have 3x the rat problem in our neighborhood than we did 5 years ago. This is a public health and safety issue that is being ignored by the city and is very serious.                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 213 | My office building doesn't recycle and I know this is not unique to this property. Why not focus on larger property owners/businesses so you can make a meaningful difference?                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 214 | I would like to see recycling picked up every week                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 215 | Keep up the good work!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 216 | Make disposal of the occasional large item or large load easier than having to rent a truck for a trip to the transfer station.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 217 | We have much more recycle paper, bottles and cans than they will allow us to recycle for free. . we need a larger can for free                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 218 | Would recycling pick up weekly increase costs? If not, then do that.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 219 | Recycling should be picked up every week also. The City of Kirkland does it and I think it would encourage more people to recycle more items (they won't run out of space) and put less in the garage that gets picked up more frequently.                                                                                                                                                                                                                                                                                                                                                                                        |
| 220 | I don't believe that apartment buildings/condos have to follow the same recycling and composting guidelines as single family homes. I don't understand why there is a difference - all Seattle residents should learn to deal with their waste in the most responsible manner possible!                                                                                                                                                                                                                                                                                                                                           |
| 221 | I live in a 6-unit building w/ no yard service. Otherwise, I would recycle food waste!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 222 | At times I have more garbage than can fit in my container (the smallest I can get). Occasionally, I have trash that is too much for my bin, but not enough for a run to my local Recycling Station. What options can be provided to those of us who honor the rules and guidelines, yet occasionally have more than we know what to do                                                                                                                                                                                                                                                                                            |

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|     |  | with?                                                                                                                                                                                                                                                                                                        |  |
| 223 |  | Please look at the benefits of the city providing small compost bins to residents in seattle to rid their own food waste. Keep in mind these must be small, as many people live in apartments/condos.                                                                                                        |  |
| 224 |  | We're terrific compared to other cities--Chicago and New York.                                                                                                                                                                                                                                               |  |
| 225 |  | Don't increase prices.                                                                                                                                                                                                                                                                                       |  |
| 226 |  | how about an incentive such as, a free or reduced cost, or voucher, for a bag of compost once a year for 'good recycling' patrons?                                                                                                                                                                           |  |
| 227 |  | The cost is near headship at level. If our income were to be reduced, we would have to cancel service.                                                                                                                                                                                                       |  |
| 228 |  | I would consider extending the pick services on the other non bacteria generating waste such as recycling and continue with weekly garbage pickup.                                                                                                                                                           |  |
| 229 |  | Bi weekly garbage is an awesome idea. Even better, switch to a 2 cart wet/dry collection system and MRF everything.                                                                                                                                                                                          |  |
| 230 |  | More contests to win dollars for neighborhood projects for reducing and recycling would be a great incentive.                                                                                                                                                                                                |  |
| 231 |  | I would like you to ban plastic bags                                                                                                                                                                                                                                                                         |  |
| 232 |  | Any tips on cleaning the yard waste bin. It's super duper gross in there because of all the food waste.                                                                                                                                                                                                      |  |
| 233 |  | Stronger programs for multi-family buildings. Apartments are the ones that have the most challenges about separating waste b/c of space.                                                                                                                                                                     |  |
| 234 |  | I would favor reducing the frequency of garbage pick up but would expect a reduction in the cost for a larger container or the fee for extra garbage bags in case I produce more garbage than typical in a given two-week period.                                                                            |  |
| 235 |  | Diaper collection would have to be an airtight scontainer due to the smell - not sure how this would work in a multi-family unit. In gneral I think more sjould be done to encourage recycling in multi-family homes, as this seems to be the weak link right now.                                           |  |
| 236 |  | Assure Multi-Family Composting (Yard AND Food Waste combined is odor and pest, if not free, at least "resistant".                                                                                                                                                                                            |  |
| 237 |  | Weekly recycling pickups would be nice (if you're going to implement any new restrictions on garbage).                                                                                                                                                                                                       |  |
| 238 |  | Go Seattle!                                                                                                                                                                                                                                                                                                  |  |
| 239 |  | this survey was frustrating. the answers didn't match the questions.                                                                                                                                                                                                                                         |  |
| 240 |  | Pet/diaper waste is a problem and MUST t be picked up weekly if this is to be properly implemented.                                                                                                                                                                                                          |  |
| 241 |  | If City is considering food/yard waste composting, need factor in that there is not much land left to use compost in the neighborhood. There are more high rise, condo dwellers in neighborhoods with no real opportunity to grow vegetables nor flowers.                                                    |  |
| 242 |  | Education is going to be huge. People get confused about what they are allowed to compost because the rules change, but there isn't adequate education.                                                                                                                                                      |  |
| 243 |  | Cut 10% of current SPU overhead in an effort to show an attempt to control costs before suggesting a rate increase.                                                                                                                                                                                          |  |
| 244 |  | I strongly support increased recycling and composting capabilities in all businesses. I currently use the smallest garbage can available, and only have 2 people in my household. Changing to garbage pickup every other week would require us to upgrade to a larger can, which is not very desirable.      |  |
| 245 |  | I think we already have an environmental mindset as a city, so encourage and foster that. Any time you try to *force* it (not collecting for mis-sorted things, charging for non-reusable grocery bags) people resent it. Get them to want to do it by making it easy and through massive education efforts. |  |
| 246 |  | You are doing a good job educating and providing. I'm just lazy. Also, even roll carts can get heavy so every 2 weeks would kill my back                                                                                                                                                                     |  |
| 247 |  | More public education, always. Treat people like they have a functioning brain.                                                                                                                                                                                                                              |  |
| 248 |  | How about putting composting bins in the bathrooms of businesses for the paper towels used to dry hands? There is no reason they couldn't be composted instead of going into landfills.                                                                                                                      |  |
| 249 |  | Maybe change the size of recycle and pick up more frequent. My garbage is picked up weekly and it is never full. But since I do recycle a lot every other week it is full. So what about a smaller container picked up weekly                                                                                |  |
| 250 |  | We need to enforce the mandate that multi-family buildings provide recycling and food waste. Not all do, so residents of the buildings that don't overload their neighboring buildings that do.                                                                                                              |  |
| 251 |  | Rather than go to every two week pick-up, enforce recycling and yard waste more stringently. We note that several neighbors do no separation of their garbage at all.                                                                                                                                        |  |
| 252 |  | Seattle residents have a high recycling rate. It is time to require businesses to recycle more.                                                                                                                                                                                                              |  |
| 253 |  | Some people have trouble separating garbage, this can be difficult with renters and at community gatherings, even when signage is clear.                                                                                                                                                                     |  |
| 254 |  | Paying the same for half the service sounds like a plan put together by Comcast. STRONGLY OPPOSE!!!!!!!!!!!!                                                                                                                                                                                                 |  |
| 255 |  | see prev comments. I am totally in favor of doing all we can to recycle/compost but need more training in apt bldgs. somehow people think they're exempt or just don't care.                                                                                                                                 |  |
| 256 |  | All steps that can be taken to reduce waste and increase recycling in Seattle should be enacted.                                                                                                                                                                                                             |  |

# 2011 Stakeholder Outreach and Responsiveness Summary

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## *Proposed Construction and Demolition Recommendations in Seattle's Comprehensive Solid Waste Management Plan*

### **1 Introduction**

In September 2011, Seattle Public Utilities (SPU) coordinated a series of stakeholder presentations to notify and gather feedback from construction trade associations, property managers, recycling haulers and processing facilities about proposed recommendations for new construction and demolition (C&D) recycling programs and requirements. The suite of proposed recommendations will work towards the goal of increasing the recycling rates of C&D materials in Seattle from the current rate of 61% to 70% by 2020. The recommended programs and requirements are included in SPU's draft *Comprehensive Solid Waste Management Plan – Picking up the Pace Toward Zero Waste*, and include the following:

- Continue promotional and technical support for industry-driven programs such as LEED and Built Green
- Continue promotion of deconstruction as an alternative to demolition
- Expand support for voluntary salvage assessment services
- Implement an 'advanced' recycling facility certification program, in cooperation with local industry and other solid waste planning jurisdictions
- Phase in a disposal ban for targeted recyclable C&D materials as end markets become well established (metal, cardboard, clean wood, carpet, plastic film wrap, new construction gypsum scrap, tear-off asphalt roofing shingles)

This package of programs was approved by the SPU and Department of Planning and Development (DPD) Directors and the Mayor's Offices, but needed an in-depth stakeholder discussion as part of the required Draft Comprehensive Solid Waste Management Plan public review process.

### **2 Goals**

The primary goals of the 2011 stakeholder engagement process included the following:

- Identify and implement effective mechanisms for informing stakeholders of the recommendations and gathering their input
- Identify and conduct outreach to a comprehensive group of target audiences including the following professions and trade associations that represent them:
  - construction and demolition contractors
  - roofing contractors
  - haulers
  - processing facilities

- property cleanup companies
- carpet manufacturers, carpet distributors, installers and flooring contractors
- property managers
- end users of recycled construction materials
- Gather feedback on the feasibility, timing and adequacy of recycling end markets for proposed individual material disposal bans

In addition to these primary goals, SPU also identified an opportunity to collaborate with King and Snohomish Counties to present a cross-jurisdictional picture of goals, strategies and requirements for increasing C&D recycling in the greater region. This opportunity supported secondary goals of creating clarity about C&D requirements for businesses that work in the City and both Counties in a streamlined and efficient manner.

### **3 Outreach Tools and Tactics**

At the initiation of the stakeholder engagement process, a variety of outreach tools and tactics were considered and reviewed to identify those that would reach the greatest number of stakeholders effectively. The following describes the process in selecting outreach tools and tactics; the selected mechanisms, those that were considered but not selected, and project tools and marketing.

#### **3.1 Outreach Planning Meetings**

SPU worked with a consultant team to assess, organize and implement the outreach process. At a kickoff meeting with SPU, the team identified the target audience groups and reviewed a variety of possible outreach strategies, including the following:

- A series of presentations with an overview of general recommendations and a focus on individual targeted banned materials
- A combined forum presentation covering general recommendations and all targeted banned materials
- Short presentations at existing industry events or meetings
- Newsletter articles to relevant industry journals or trade associations
- A live and recorded webinar or webinar series
- Website with comment form or survey to collect feedback
- Different methods of reaching the target audience, including direct emails, emails to various industry distribution lists and phone calls

At the initial meeting the team also identified the opportunity to include a multi-jurisdictional approach and invited representatives from King and Snohomish County to participate as presenters.

Subsequent planning meetings confirmed the following outreach mechanisms:

- A half-day forum covering general recommendations and all targeted banned materials
- Shorter presentations at industry events or trade association meetings (length of time dependent on meeting schedule availability)

- Newsletter articles
- Website with short survey to collect feedback

The team decided that the single forum approach was the most efficient way to share information with a diverse group of stakeholders. Shorter presentations would also be given to interested construction trade associations and newsletter articles would be created to advertise the presentations. A short survey for “C&D Professionals” would be created as part of the general public survey posted on the SPU website page for the draft Solid Waste Plan.

Prior to the forum event, the full team, including SPU, DPD, representatives from King and Snohomish Counties, and the consultant met to review the draft Power Point presentation and discuss how the presentation could be modified for shorter presentations.

### 3.2 Scheduling and Marketing Outreach Activities

The SPU and consultant team scheduled the half day forum for September 29<sup>th</sup> at the Associated General Contractors of Washington (AGC) offices in Seattle, which offered a convenient location, parking, and built-in event advertising through the AGC Education Foundation. The late September date was selected as it allowed ample time for marketing the event while still providing time for forum participants to formally submit comments to SPU on the draft Solid Waste Plan.

In early July, SPU and the consultant team began contacting trade organizations to identify opportunities to deliver presentations about the proposed recommendations at regularly scheduled events, learn of opportunities to notify members through newsletters, and to notify the organization about the September 29<sup>th</sup> half day forum. The table below shows all industry organizations contacted through the marketing phase of the project:

| <b>Organization</b>                                                    | <b>Target Audience</b>                              |
|------------------------------------------------------------------------|-----------------------------------------------------|
| <b>American Institute of Architects, Seattle</b>                       | <i>Architects, Builders</i>                         |
| <b>Associated Builders and Contractors</b>                             | <i>Construction Contractors</i>                     |
| <b>Associated General Contractors</b>                                  | <i>Construction Contractors</i>                     |
| <b>Building Owners and Managers Association of Seattle King County</b> | <i>Property Managers</i>                            |
| <b>Cascadia Green Building Council</b>                                 | <i>Green Building Advocacy</i>                      |
| <b>Construction Materials Management Association</b>                   | <i>Construction Contractors</i>                     |
| <b>Master Builders Association of King and Snohomish Counties</b>      | <i>Construction Contractors</i>                     |
| <b>Northwest EcoBuilding Guild</b>                                     | <i>Green Building Professionals</i>                 |
| <b>Northwest Building Salvage Network</b>                              | <i>Building Salvage and Deconstruction, Haulers</i> |
| <b>Northwest Wall and Ceiling Bureau</b>                               | <i>Contractors, Manufacturers, Dealers</i>          |
| <b>Roofing Contractors Association of Washington</b>                   | <i>Roofing Contractors</i>                          |
| <b>Seattle Building and Construction Trades Council</b>                | <i>Construction Contractors</i>                     |

| Organization                                                | Target Audience                                         |
|-------------------------------------------------------------|---------------------------------------------------------|
| Washington Floor Covering Association                       | <i>Carpet/Flooring Installers and Manufacturers</i>     |
| Washington State Office of Minority and Women's Enterprises | <i>Construction Contractors, Haulers, Manufacturers</i> |

In addition to organizations, phone calls and over 500 emails were sent to the following groups of stakeholders for which an email distribution list or contact roster existed:

- State Women and Minority Business Enterprises (WMBE) list for Construction and Cleanup Companies
- Plastic film generators located in Seattle
- Carpet industry contacts
- 2010 Stakeholder Group (over 25 contacts who participated in stakeholder interviews concerning the proposed C&D regulations in late 2010/early 2011. The group included general contractors for residential, commercial and deconstruction, salvage and reuse businesses, and C&D processing facilities.)
- Affordable Housing Authorities/Organizations (Habitat for Humanity, Enterprise Community Partners, King County Housing Authority, Beacon Development, Interim CDA)
- Junk haulers
- Roofers
- King County LinkUp contacts

### 3.3 Project Documents and Tools

The following documents and tools were developed or referenced as part of the stakeholder engagement process:

#### Developed

- Newsletter articles
- Master Power Point presentation (version for half-day presentation and shorter presentations)
- Targeted end market materials presentation (version for half-day presentation and shorter presentations)
- Website
- Online survey for feedback
- Calendar of events scheduled
- Template announcement/invitation emails
- Roster of presenters from SPU, DPD, King and Snohomish Counties

#### References

- SPU's Draft Comprehensive Solid Waste Management Plan

- Existing stakeholder contact lists/rosters

## 3.4 Summary of Outreach Events and Participation

### 3.4.1 Presentations

Ten presentations were delivered by SPU, with the majority of them supported by King and Snohomish County co-presenters. Around 100 stakeholders attended an in-person event between 6/1/11 and 10/6/11.

| <b>Outreach Event</b>                                                                                                 | <b>Date</b> | <b>Format</b>                                                                                                                                                                                                                                                                                         | <b>Audience</b>                                                                     |
|-----------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Seattle Solid Waste Advisory Committee (SWAC)</b>                                                                  | 6/1/11      | Presentation:<br><i>Gabriella Uhlar-Heffner, SPU</i>                                                                                                                                                                                                                                                  | 8 Participants<br><i>Citizen advisory committee</i>                                 |
| <b>Building Salvage Network hosted by Second Use Building Materials (Seattle)</b>                                     | 9/7/11      | 2-hour meeting:<br><i>Gabriella Uhlar-Heffner, SPU</i><br><i>Shirli Axelrod, SPU</i><br><i>Tom Gannon, SPU</i><br><i>Joel Banslaben, SPU</i><br><i>Kinley Deller, King County</i><br><i>Michelle Miller, King County</i><br><i>Bernard Meyers, Snohomish County</i><br><i>Sego Jackson, Snohomish</i> | 6 Participants<br><i>Salvage and Reuse industry business owners/representatives</i> |
| <b>Master Builders of King and Snohomish Counties (Seattle)</b>                                                       | 9/14/11     | Breakfast Meeting:<br><i>Gabriella Uhlar-Heffner, SPU</i>                                                                                                                                                                                                                                             | 8 Participants<br><i>Residential builders, contractors, professionals</i>           |
| <b>SPU Utility Services – Key Account Representatives (Seattle)</b>                                                   | 9/15/11     | 30 min presentation:<br><i>Gabriella Uhlar-Heffner, SPU</i>                                                                                                                                                                                                                                           | 10 Participants<br><i>Customer Service Branch</i>                                   |
| <b>Office of Women and Minority Business Enterprises (OWMBE) (hosted by Small Business Administration in Seattle)</b> | 9/20/11     | 2-hour presentation:<br><i>Gabriella Uhlar-Heffner, SPU</i><br><i>Shirli Axelrod, SPU</i><br><i>Tom Gannon, SPU</i><br><i>Joel Banslaben, SPU</i><br><i>Kathleen Petrie, DPD</i><br><i>Kinley Deller, King County</i><br><i>Kris Beatty, King County</i><br><i>Bernard Meyers, Snohomish</i>          | 3 Participants<br><i>Hauler, Construction Contractor, Carpet Installer</i>          |
| <b>State Flooring Association</b>                                                                                     | 9/20/11     | Brief update during regular meeting:<br><i>Shirli Axelrod, SPU</i>                                                                                                                                                                                                                                    | 100 participants<br><i>Flooring professionals</i>                                   |
| <b>Association of General Contractors (AGC) (Seattle)</b>                                                             | 9/22/11     | 2-hour presentation:<br><i>Gabriella Uhlar-Heffner, SPU</i><br><i>Tim Croll, SPU</i>                                                                                                                                                                                                                  | 12 Participants<br><i>Construction Contractors</i>                                  |



| <b>Outreach Event</b>                                                                | <b>Date</b> | <b>Format</b>                                                                                                                                                                                                                                                                                | <b>Audience</b>                                                           |
|--------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
|                                                                                      |             | <i>Shirli Axelrod, SPU<br/> Hans Van Dusen, SPU<br/> Joel Banslaben, SPU<br/> Kinley Deller, King<br/> County<br/> Kris Beatty, King County<br/> Kathleen Petrie, DPD<br/> Bernard Meyers,<br/> Snohomish</i>                                                                                |                                                                           |
| <b>Association of General Contractors (AGC) Education Foundation</b><br>(Seattle)    | 9/29/11     | 5-hour Stakeholder Forum:<br><i>Gabriella Uhlar-Heffner, SPU<br/> Shirli Axelrod, SPU<br/> Hans Van Dusen, SPU<br/> Kinley Deller, King<br/> County<br/> Kris Beatty, King County<br/> Kathleen Petrie, DPD<br/> Bernard Meyers,<br/> Snohomish<br/> Greg Mackey, Snohomish</i>              | 25 Participants<br><i>Building industry stakeholders</i>                  |
| <b>Sound Transit</b><br>(Seattle)                                                    | 10/5/11     | Presentation:<br><i>Tim Croll, SPU<br/> Vicky Beaumont, SPU<br/> Gabriella Uhlar-Heffner, SPU<br/> Hans VanDusen, SPU</i>                                                                                                                                                                    | 6 Participants<br><i>Sound Transit engineers and planners</i>             |
| <b>Associated Builders and Contractors of Western Washington (ABC)</b><br>(Bellevue) | 10/6/11     | Roundtable Presentation:<br><i>Gabriella Uhlar-Heffner, SPU<br/> Shirli Axelrod, SPU<br/> Tom Gannon, SPU<br/> Kathleen Petrie, DPD<br/> Kinley Deller, King<br/> County<br/> Sego Jackson,<br/> Snohomish<br/> Greg Mackey, Snohomish<br/> Michelle Caulfield,<br/> Cascadia Consulting</i> | 12 Attendees - <i>Construction Contractors, Roofer, Architect, Hauler</i> |

### 3.4.2 Newsletter Announcements

| <b>Newsletter</b>                                                      | <b>Date</b>      | <b>Format</b>                | <b>Audience</b>                       |
|------------------------------------------------------------------------|------------------|------------------------------|---------------------------------------|
| <b>Associated Builders and Contractors of Western Washington (ABC)</b> | 8/3/11<br>9/7/11 | Newsletter                   | <i>Building Industry Stakeholders</i> |
| <b>Association of General Contractors (AGC)</b>                        | 8/18/11          | Education Forum Announcement | <i>Building Industry Stakeholders</i> |
| <b>Master Builders of King</b>                                         | 8/22/11          | Newsletter                   | <i>Building Industry</i>              |

|                                                                  |                    |                             |                                              |
|------------------------------------------------------------------|--------------------|-----------------------------|----------------------------------------------|
| <b>and Snohomish Counties</b>                                    | and<br>10/3/11     |                             | <i>Stakeholders</i>                          |
| <b>NW EcoBuilding Guild</b>                                      | 9/7/11             | Newsletter                  | <i>Green Building Industry Professionals</i> |
| <b>Office of Women and Minority Business Enterprises (OWMBE)</b> | 9/7/11             | Electronic posting of event |                                              |
| <b>Roofing Contractors Association of Washington</b>             | 8/26/11<br>9/11/11 | Newsletter                  | <i>Roofing Contractors</i>                   |

### 3.4.3 Online Outreach

SPU developed a webpage dedicated to sharing the Draft Comprehensive Solid Waste Plan and collecting feedback. The website, [www.seattle.gov/util/solidwasteplan](http://www.seattle.gov/util/solidwasteplan), was live on August 5<sup>th</sup>, 2011 and included an email link and contact information to submit feedback about the plan recommendations.

### 3.4.4 Media and Press

Several articles from outside authors were published as a result of the outreach efforts, including the following:

- *MBA Comments on Proposed Solid Waste Plan Revisions*, October 3, 2011. Master Builder’s Association ‘Environment’ page. <http://www.masterbuildersinfo.com/index.cfm?/Members/Issue-Advocacy/Environment/page/MBA-Comments-on-Proposed-Solid-Waste-Plan-Revisions>
- *Seattle cutting construction, demolition waste*. October 6, 2011. Seattle Daily Journal of Commerce, by Katie Zemsteff.

## 4 Feedback Collected

The following section summarizes discussions surrounding several key issues addressed during the outreach events. It also includes comments found in individual letters and E-mails sent to SPU during the public comment period. *Those documents have not been reproduced here but can be obtained by contacting Gabriella Uhlar-Heffner of Seattle Public Utilities (SPU) at (206) 386-9772.*

Comments are summarized by the following theme categories:

### Existing Policy

- Use of “90/10” Rule for enforcing “Illegal Hauling” by third party haulers
- Exercise of flow control over disposal of residuals from processing

### Basis for New Policy

- Reliability of Recycling Survey data
- Voluntary versus Non-Voluntary Approaches

## Proposed New Programs

- Applicability of landfill disposal bans
- Need for flexibility
- Cost of compliance for small projects
- Coordination needed between agencies
- Need for permitting and economic development support
- One versus two or multiple collection containers
- Third Party Certification costs to smaller facilities
- Classification of new waste reduction and recycling technologies
- Non-regulatory approaches for encouraging greater recycling
- Focus more on residual from processing and less on facility diversion percentages
- Adequacy of local mixed recycling infrastructure in Seattle

## Proposed New Program Implementation

- Space restraints for multiple recycling containers

## Material Specific Disposal Ban Questions

- Wood – pallet take back program suggestion
- Carpet – specific end market question
- Asphalt Paving– applicability of a landfill disposal ban to gravel pits
- Concrete – specifications may limit use, possible development of stockpiles
- Plastic Film – viability of existing end markets and definition of “clean”
- Tear-Off Asphalt Shingles – existing market oversupply issues and challenges of finding end markets for other types of roofing materials

*SPU responses in highlighted text*

### 4.1 Existing Policy

#### **4.1.1 The “90/10 Rule” remains a controversial policy element with stakeholders looking for regulatory approaches that incentivize rather than potentially penalizing recycling activities (From the 9/22 AGC meeting and 9/29 Stakeholder’s Forum):**

In prior C&D stakeholder meetings, the issue of the third party hauling of C&D containers with less than 90% recyclable material in them was prominent. This topic of what constitutes a recycling container that can legally be hauled by a third-party recycler (and not the City-contracted hauler in the case of Seattle or the franchised hauler in the case of Snohomish and King Counties) was again raised particularly during the September 29 C&D Stakeholder Forum which had a diverse audience of recyclers and processors. The “90/10” rule for measuring the amount of contamination in a recycling container was covered under the “Existing Policies and Programs” part of the presentation given by the respective agencies. Audience questions regarding this existing policy in the City of Seattle, King and Snohomish County focused on:

- whether this assessment was based on weight or volume,

- the methods used to calculate the percentage (visual inspection, weighing of loads, etc.),
- how in-depth the inspections were to justify a load that did not meet the 90/10 rule (are bags opened, are loads dumped or just viewed from the top, etc.), and
- the type of training given to inspectors assessing the loads.

In addition, some stakeholders were concerned that there is limited customer protection from a processor claiming that a load does not meet “90/10” rule requirements, or that it contains too much contaminated non-recyclable material.

*County and City staff responded that the inspections of recycling containers are visual: the 90% recyclable content is estimated by volume, not on a weight basis. Problem loads under the 90/10 rule to date are grossly over the 10% ‘incidental’ garbage or non-recyclable C&D threshold, rather than just a few percentage points over the threshold. Containers with more than 10% non-recyclable materials can be either self-hauled by the contractor, or hauled by the City’s contracted hauler of C&D for disposal (or the franchised hauler in the case of King and Snohomish Counties).*

One industry stakeholder commented that hauling oversight is the only way to monitor the 10% rule and meet future facility certification diversion requirements.

**4.1.2 Why doesn’t the City of Seattle currently exercise flow control over the residuals from processing? (From the 9/29 Stakeholder’s Forum):**

A question was asked why the City of Seattle does not exercise flow control over the residuals from processing which often end up being landfilled in non-designated disposal sites.

*It was explained that currently Seattle, in contrast to Snohomish County, does not currently monitor the destinations for residuals from processing. However, Seattle does tax material bound for disposal, including residuals from processing (plus end-uses not considered recycling or beneficial use such as alternative daily cover or industrial waste stabilizer). With the proposed future disposal bans, there will be more of a focus on the fate of residuals to ensure they do not contain significant amounts of banned materials.*

**4.1.3 Our jobsite specifications often require a 75% recycling rate for demolition due to the large amount of concrete often involved. What is a feasible requirement for new construction? (From the 10/5 meeting with Sound Transit staff):**

*SPU will research the recovery of different materials on LEED and Built Green job sites and share that data with Sound Transit staff so they can set their recycling rates for different types of projects.*

## **4.2 Basis for New C&D Policies**

**4.2.1 Annual Recycling Survey data reported to the City of Seattle by haulers and processors may not fully reflect the true recycling rate for metal (from the 9/29 Stakeholder’s Forum):**

Participants were surprised by the relatively low percentage of metals recycled (51%) as reported to the City of Seattle by processors and haulers for the 2010 Annual Recycling Survey.

It was noted that many contractors and demolition companies recycle, sell, or reuse metals directly from the job site to a metal recycler rather than sending it as part of a mixed or source separated load to processing facilities, because of the high market value of metals.

*It may be that the metal recycling reported by C&D haulers and recyclers is being counted as coming from commercial and not construction site sources. SPU may revise its licensed recycler 2011 Recycling Annual Report form to indicate the origin of materials such as metal, cardboard and plastic film, which can come from either commercial or construction sources.*

#### **4.2.2 Why the big difference in recycling levels reported for King County versus the City of Seattle? (From the 9/29 Stakeholder's Forum):**

Participants wondered why King County reported a 2009 C&D recycling rate of 76% while Seattle reported a 58% recycling rate for that year.

*Unfortunately, the City and County cannot at this time adequately explain the differences between the reported 2009 recycling rates. King County receives their data from the State Department of Ecology (DOE) from individual companies for Seattle and King County. There is some adjustment that usually needs to be made to the DOE data for "C&D Debris" tonnage and wood that is not identified as far as county of origin.*

*The City of Seattle requires licensed recyclers, processors and haulers operating in the City to submit a Recycling Annual Report. Processors who are located outside of the City are not legally required to submit Seattle's Recycling Annual Report, though the tonnage sent to those facilities is usually captured through the hauler's reports. A coordinated region-wide C&D facility certification program will help tremendously in being able to reconcile C&D tonnage data.*

#### **4.2.3 Why couldn't existing voluntary and industry-driven programs get us to 70% recycling for C&D in Seattle? (From the 9/22 AGC meeting):**

A question was asked if existing programs alone could get Seattle to the proposed 70% C&D recycling target for the City as a whole.

*The City's recycling analysis show that an expansion of existing voluntary programs plus facility certification can yield around 65% C&D recycling by 2020 for the City as a whole. Existing incentives programs such as LEED or Built Green, coupled with DPD Priority Green requirements for waste diversion, are effective for large projects requiring a new construction, demolition or alternation permit. However, most roofing and many small remodeling projects do not require building permits, so incentive approaches tied to the building permit would not be effective strategies for that audience.*

## 4.3 Proposed New Programs and Regulations

### 4.3.1 Business stakeholders are appreciative that the policies are inclusive of residential customers (from the 9/29 Stakeholder Forum):

Business stakeholders expressed relief that the proposed disposal bans would impact both residential and commercial customers, as they often feel they bear the brunt of the regulatory burden.

### 4.3.2 Stakeholders recommend that the City build in flexibility to the bans based on end market volatility (from the 9/29 Stakeholder Forum):

Flexibility in the rules for all banned materials should be considered. The City should be regularly checking the end market viability for banned materials to make sure the demand of the recycled products covers the cost of storage and recycling. Wood and concrete were two materials that specifically came up with potentially volatile end markets, though any material could have a changing end market that could impact the feasibility of a material ban. Stakeholders are interested in knowing how the City might handle market volatility, and how they would communicate any changes in a ban. They recommend that the ban include this approach upfront.

*SPU will build flexibility into its future C&D disposal ban ordinance to address end-market volatility for certain commodities, sudden closures of recycling facilities, or the loss of major recycling and/or beneficial use end markets.*

### 4.3.3 Will these recycling requirements increase costs to the contractor? How much room can we give contractors in developing our job specifications? (10/5 meeting with Sound Transit staff):

This question was asked in relation to developing project specifications and if contractors can be given the end goal and then flexibility in figuring out how to achieve that end results specific to each job site situation.

*Seattle does not anticipate a contractor cost increase from complying with the proposed disposal bans, since tip fees at recycling facilities are less than the tip fee for disposal. This could become an issue if contractors need to transport materials outside of Seattle because of a lack of certified processing facilities within Seattle. SPU will continue to work with the private sector to ensure adequate processing capacity--either in or within close proximity to Seattle--and that those facilities meet certification goals and standards.*

### 4.3.4 The City needs to evaluate the economic impact on builders of any new regulation particularly those already doing Built Green Projects (from the 9/14 meeting with the Master Builders):

Concerns were raised regarding the economic impact of proposed disposal bans on smaller contractors in particular as well as those already engaged with Built Green projects. It was pointed out that there are additional handling costs associated with on-site sorting and this

should be taken into consideration. It was also noted that often it is better to have all materials in one container for many space constrained situations.

*Many individual project variables make it difficult to predict the overall economic impact on contractors. Such variables include type of project (new construction, remodel, demolition), project size, types of materials generated, and the location and type of facility the contractor currently uses for disposal.*

*Case studies and contractor interviews conducted 5 years ago documented a cost savings for large projects that have a recycling element (2006 SPU “Current Management Practices for C&D and Recommendations for Increased Recovery Report “). The report mentioned concrete and metal were the usual materials separated out for recycling by a wide range of construction contractor types (large as well as smaller subcontractors). Concrete and metal are also always reported as being recycled for LEED and Built Green projects from any type of job site.*

*Subcontractors are commonly responsible for hauling and disposing of materials generated during their part of a project. Future focus groups with dry wall contractors, roofers, carpet installers and other groups should be held to identify any barriers they may have to complying with proposed future disposal bans on carpet, gypsum and tear-off asphalt shingles.*

*There will also be a special focus on the smaller contractors who currently use the City’s transfer stations for disposal of construction waste (mostly from remodeling projects). They typically pay a disposal rate of \$145/ton. SPU will encourage those customers to use certified private recyclers and private transfer stations for C&D waste disposal where possible. Tip fees at the private recycling facilities and transfer stations are generally less than at the City stations, even with longer transportation costs factored in.*

*SPU welcomes further input on what resources can be offered to the private sector to make sure that complying with the proposed disposal bans does not become an economic burden. Certainly, past contractor surveys have highlighted the critical need to have a robust recycling infrastructure in place locally.*

*Finally, it is acknowledged that finding the space for several types of containers is often difficult on space-constrained Seattle job sites. SPU will consider a one-container option but only if it is hauled by the City contracted hauler and the material is sorted at a certified “dirty” material recovery facility (MRF).*

#### 4.3.5 Overlapping and Conflicting Government Regulations (from the 9/14 meeting with Master Builders and 9/29 Stakeholder Forum):

Coordination is needed between all agencies involved in any aspect of permitting. Contractors might lack space for multiple collection containers, for example, due to restrictions on placing containers in the public right-of-way.

*SPU has been working over the past years with DPD in developing a set of C&D recycling initiatives that are not burdensome on construction contractors yet are effective at increasing*

*recovery rates. We agree that more work can potentially be done with the Seattle Department of Transportation on street use restrictions and fee structure.*

#### **4.3.6 The City should coordinate with business development organizations and any other agencies that will be involved in permitting. (From the 9/29 Stakeholder's Forum):**

Participants at the 9/29 Forum noted that by using a ban as one policy vehicle, businesses may be either incentivized or discouraged from doing business in the City, and recommended the City offer permitting and economic development support.

*City and County solid waste and building department staff are identifying financial mechanisms and permitting assistance with the City and County Offices of Economic Development as well as the State Department of Commerce for businesses interested in developing more local recycling infrastructure or recycling end markets. Business resources may also be available.*

#### **4.3.7 Clarity is needed on whether the City would authorize a one box option for all recyclable and non-recyclable C&D since many job sites struggle with the space requirements for having separate bins for recycling and non-recyclable C&D for disposal (from the 9/29 Stakeholder Forum):**

At the 9/29 C&D Stakeholder Forum participants were unclear about whether a one box collection option for all C&D generated on-site would be permitted under the proposed disposal bans. The one box collection option has appeal for many Seattle job sites where space and logistics make having a separate recycling and disposal container challenging. One stakeholder recommended the City coordinate with haulers to accept piles of material placed next to the waste bin, in lieu of two bins, since this can take up less space and doesn't require an additional container fee. Another added that for space constrained construction job sites or remodeling activities within a commercial building it may be worthwhile to pay more for just one bin that accepts everything which could be sorted at a material recovery facility permitted to accept "dirty" loads of C&D for sort line recycling.

*SPU responded that the one bin option is under consideration, but only if the City-contracted hauler (Waste Management) hauls the box it goes to a certified 'dirty MRF' that has the capacity and ability to process the load in accordance with future recycling requirements. The materials ban will still be in effect, even for a one bin option if it becomes available.*

King County projects currently require two bins (one bin for recycling, one bin for waste). The County has recently launched the Clean Bin campaign to recognize job sites that are properly using the two bin system with high diversion rates. King County also notes that on job sites with more space, three bins (one for phase appropriate source-separated materials, one for commingled recycling and one for waste) is another way to reach high diversion rates, though this may be challenging for space-constrained job-sites in Seattle. King County has also discussed the idea of smaller bins, or nested bins with haulers to come up with solutions for space constrained sites.

Snohomish County also requires two bins, one for garbage and one for C&D recycling and has an enforcement policy with fines in place.



**4.3.8 Third party facility certification is beneficial, yet it should not include fees that are a burden to smaller facilities and should be sufficiently regulated to ensure compliance (from the 9/29 Stakeholder’s Forum):**

Several stakeholders commented that while they applauded the 3<sup>rd</sup> party certification approach, in order for it to be successful it should not pose additional cost burdens to the facility in order to achieve the certification. Additionally, in order for the industry to view the certification as valid, the City should allocate sufficient staffing to regulate certification compliance.

*The cost and adequacy of third party certification services will be researched in 2012. Recently the national Construction Materials Recycling Association (CMRA) established its own guidance document for verifying C&D processing facility inflows and outflows, as well as its own third party certification arm. This should help reduce the cost of this type of monitoring and service.*

**4.3.9 Be careful and specific in selecting and using new waste reduction and recycling technology definitions that may be approved or banned as part of market development (from the 9/29 Stakeholder Forum):**

One industry comment received noted that many new technologies and terms can cause confusion, and if not addressed very specifically, this poses risks that beneficial new technologies may be miss-categorized or grouped together with older technologies that have additional regulatory burdens.

*SPU conducts life cycle cost analysis on alternative waste processing methods and would welcome specific information regarding new technologies for specific commodities in evaluating if they should be classified as recycling, beneficial use or disposal*

**4.3.10 A few stakeholders were interested in investigating approaches that would use reduced costs for recycling as an incentive in lieu of the 90/10 rule or disposal bans. (from the 9/29 Stakeholder Forum):**

*Financial incentives are already in place through much lower tip fees at recycling facilities versus solid waste transfer stations. Taxes also apply to non-recyclable waste.*

**4.3.11 Focusing on facility residual processing in lieu of diversion percentages remains a preferred option for some stakeholders (from the 9/29 Stakeholder Forum):**

Discussed at great length during the 2010 Stakeholder Involvement process, the topic of regulating residuals from processing in lieu of diversion percentages is favored by many. Even though residuals are taxed, more emphasis on reducing residuals and tracking where they end up may help better meet the end goals. (See comment 4.1.2)

*The facility certification process as currently envisioned will involve both a required diversion percentage requirement by facility category (source separated recycling, “commingled” recycling and MRF at solid waste transfer station), and sampling of the residual from the sort lines for C&D loads delivered for processing.*

#### **4.3.12 Concern about the adequacy of recycling infrastructure in Seattle for materials subject to disposal bans (from 9/7 meeting with the NW Building Salvage Network):**

One point raised during the 9/7/11 discussion with NW Building Salvage Network members is that for increased deconstruction activities to take place there should be an adequate number of mixed recycling facilities located within or close to Seattle in order reduce transportation costs.

*The proposed disposal bans on targeted C&D materials should spur more private sector interest in developing mixed or even source-separated, recycling facilities within or close to Seattle.*

### **4.4 Proposed New Program Implementation**

#### **4.4.1 Individual project support for successful implementation of policies will help projects with small sites or challenging operational logistics (from 9/29 Stakeholder Forum):**

An operator of a large hotel undergoing a full renovation while maintaining operations in downtown Seattle noted that the current regulations (two bins) and proposed regulations present logistical challenges. Many sites in Seattle likely have similar space constraints, such as one loading dock responsible for removing waste and recycling, while still accepting incoming materials for the renovation and ongoing operations.

*Both SPU and King County noted that on-site technical assistance can be arranged, meeting as needed with owners, general contractors and property managers, to help identify support opportunities. Stakeholders expressed interest in seeing more job-site contractor training for how to meet requirements for individual job sites, as requirements change and programs are rolled out.*

#### **4.4.2 Create specific guidelines for banned materials (from the 9/29 Stakeholder Forum):**

One comment regarding implementation of disposal bans noted that guidelines about percent of load and size of particles not allowed should be created. Some banned material may be too small to be easily sorted into separate containers, and having this knowledge upfront would be helpful for compliance.

*In 2012 guidelines will be developed regarding the threshold for banned materials in disposal containers at job sites and in processing facility residual. Seattle and King County will undertake a sampling study at C&D processing facilities, on a voluntary basis, which should help develop such a guidance document.*

#### **4.4.3 There is support for the City leading adequate education and outreach efforts through various programs and support prior to implementing bans (from the 9/22 AGC meeting and 9/29 Stakeholder Forum):**

In general, respondents acknowledged the City's efforts to proactively prepare the market, customers and industry for bans through development of educational offerings, outreach, and programs that offer support.

## 4.5 Material Specific Disposal Bans

### 4.5.1 Wood

- Consider developing a 'Pallet Take Back' policy instead of focusing on wood recycling.
- If Seattle Steam is still using wood chips, publicize how wood waste can be directed straight to this end user.
- Regular monitoring of the wood end market should be a part of the ban, as the end markets can fluctuate greatly.

*SPU is aware of the volatility of end markets for clean wood with the impending closure of the Kimberly Clark co-generation boiler in Everett. We will consider pushing back the proposed date for a disposal ban on clean wood from 2013 to 2014. More market development for recycling, rather than fuel end uses of clean wood, is most likely needed.*

*SPU will also focus in 2012 on identifying and promoting the reuse of salvageable lumber. A "pallet take back" policy is a good suggestion as well.*

### 4.5.2 Carpet

- Investigate market development for using recycled carpet as underpinnings for green roof square containers. This is a current end use, but does not appear to be done locally.
- A focused education, inspection and enforcement component for the carpet ban is needed to avoid health hazards from contaminated materials that are very often placed in carpet rolls prior to delivering to a recycling facility.

*SPU and King County have developed an education document now available entitled "2011 Carpet Removal Best Practices for Carpet Recycling" that addresses this issue of remodeling project debris ending up in removed carpet rolls. It is posted on King County's Link-Up website (<http://your.kingcounty.gov/solidwaste/linkup>) and will be distributed to flooring professionals as carpet installers and remodeling contractors.*

### 4.5.3 Asphalt Paving

Stakeholders needed clarification about what the asphalt paving ban requires, and if it pertained to asphalt that is dumped in a gravel or sand pit.

*The City clarified that the ban is for asphalt disposal in landfills. Asphalt paving that ends up in a gravel pit would not constitute recycling. Whether such "fill" applications could be classified as "beneficial Use" would depend on the permitting status of the activity in site specific situations.*

### 4.5.4 Concrete

- While concrete may currently have high recycling rates, limited or seasonally dependent end-uses may pose future challenges for maintaining these high rates and support for recycled concrete market development is needed.
- Recyclers and those motivated to use recycled concrete are also challenged by limitations in specifications.

- The seasonality of paving markets and limitations on the use of rubble as fill material can both result in concrete recyclers needing to stockpile material.
- Even though concrete recycling rates are high, the proposed ban may create strain on recyclers unless product demand increases. Market development for products that specify recycled concrete is a possible solution to address this challenge.
- Once the Asphalt Paving, Bricks and Concrete (ABC) ban is in place in 2012, stakeholders recommended that policy makers keep informed of the changing specifications and market readiness for recycled concrete products – if the market is constrained then the ban implementation schedule may need reevaluation.

*The issues relating to end markets for recycled concrete aggregates are acknowledged. There are Washington State Department of Transportation restrictions on the use of crushed concrete aggregate in fill situations due to its high pH levels and water quality concerns. Recycled concrete aggregate is commonly used in the manufacture of Portland cement up to a certain threshold (50% in the Standard City of Seattle specification for recycled concrete). While the demand for concrete aggregates may have been reduced in recent years due to economic factors, the availability of gravel aggregate from quarry sites may be in short supply in the future.*

*SPU and King County will keep in touch with State, City and County Department of Transportation staff regarding standard specifications for recycled concrete aggregates and project specific procurement of concrete for road base, sidewalk and building projects. Similar end market concerns have not been received regarding limitations on the amount of recycled asphalt pavement that can be used in new asphalt paving mixes.*

#### 4.5.5 Plastic Film

- There is some concern about the viability of existing end markets for plastic generated in the City. A comment submitted by an industry stakeholder recommended the City remain receptive to considering alternative technologies as possible markets for the growing volume of difficult to recycle material which can include plastic film and bags
- The City will need to define “clean” – should it exclude the plastic film covering up curing concrete and hillsides at construction sites?

*A primary local end market for clean plastic film is the New Wood facility in Elma, Washington where it is a component in the manufacturing process. A disposal ban on plastic film will need to be very specific about the types of film wrap and sheeting – at this time it would probably not include the sheeting placed on hillsides or covering up curing concrete because of contamination issues.*

#### 4.5.6 Tear-Off Asphalt Shingles

- One contractor submitted a comment that aside from tear-off asphalt shingles, other roofing material has been very challenging to find an end market. This is a market that could be developed.
- One industry stakeholder noted that the market is somewhat oversaturated with asphalt shingles, and has encountered times when recyclers will not accept tear-off shingles due

to oversupply or equipment. They recommended the City be proactive in making sure outlets are available to handle the asphalt supply that will result from the ban.

*The disposal ban for tear-off asphalt shingles is proposed to be effective in 2014 though this will be dependent upon the WA State Department of Transportation adopting specifications on the use of the shingles in hot mix paving applications. The current market for this material is for private roadway paving projects. The 2014 implementation date will likely be delayed if significant end markets do not develop and processing capacity is still very limited.*

#### **4.5.7 End Uses for Other C&D Materials**

It was mentioned that in order to achieve the goal of zero waste the City should focus on finding end-use, processing facilities and take-back programs for other common C&D materials such as ceiling tiles, fiberglass insulation of all types, colored rigid insulation boards and EPS Styrofoam

*SPU will have a consultant focus on the available market end-uses and the collection/processing infrastructure for these new construction materials in 2012. The manufacturers will most likely need to be contacted regarding City and County interest in having such infrastructure developed locally.*

#### **4.5.8 Needed Support for Market Development in General**

While the bans are great developments, what work is SPU doing to promote end markets? If there are no end markets, the bans will not make any difference.

*SPU and King County are working closely with the State Department of Commerce and local Economic Development agencies on identifying and developing the end markets, and needed collection and processing infrastructure, for targeted commodities. Recently these commodities have included those generated from construction job sites, such as carpet, tear-off asphalt shingles and clean wood. This has been accomplished through a variety of programs – such as King County’s Link-up Program for businesses, processors and commodity end users, the Industrial Synergy Project plus commercial sector educational outreach on recycling and resource conservation conducted through SPU’s Resource Venture contract.*

*Both Seattle and King County are also very active in the Northwest Product Stewardship Council to foster producer responsibility on the part of manufacturers.*

*In addition, the city’s purchasing power has been leveraged to promote demand for recycled products and the recycling of discarded materials. The City of Seattle Purchasing Office recently initiated a contract for public agencies nationwide through the US Communities purchasing collaborative. The contract requires carpet recycling, and purchasing recycled-content products consistent with NSF/ANSI-140-Gold standards for carpet. For several years already, City of Seattle jobs require the recycling of removed carpet. The same requirement applies to Washington State agencies.*