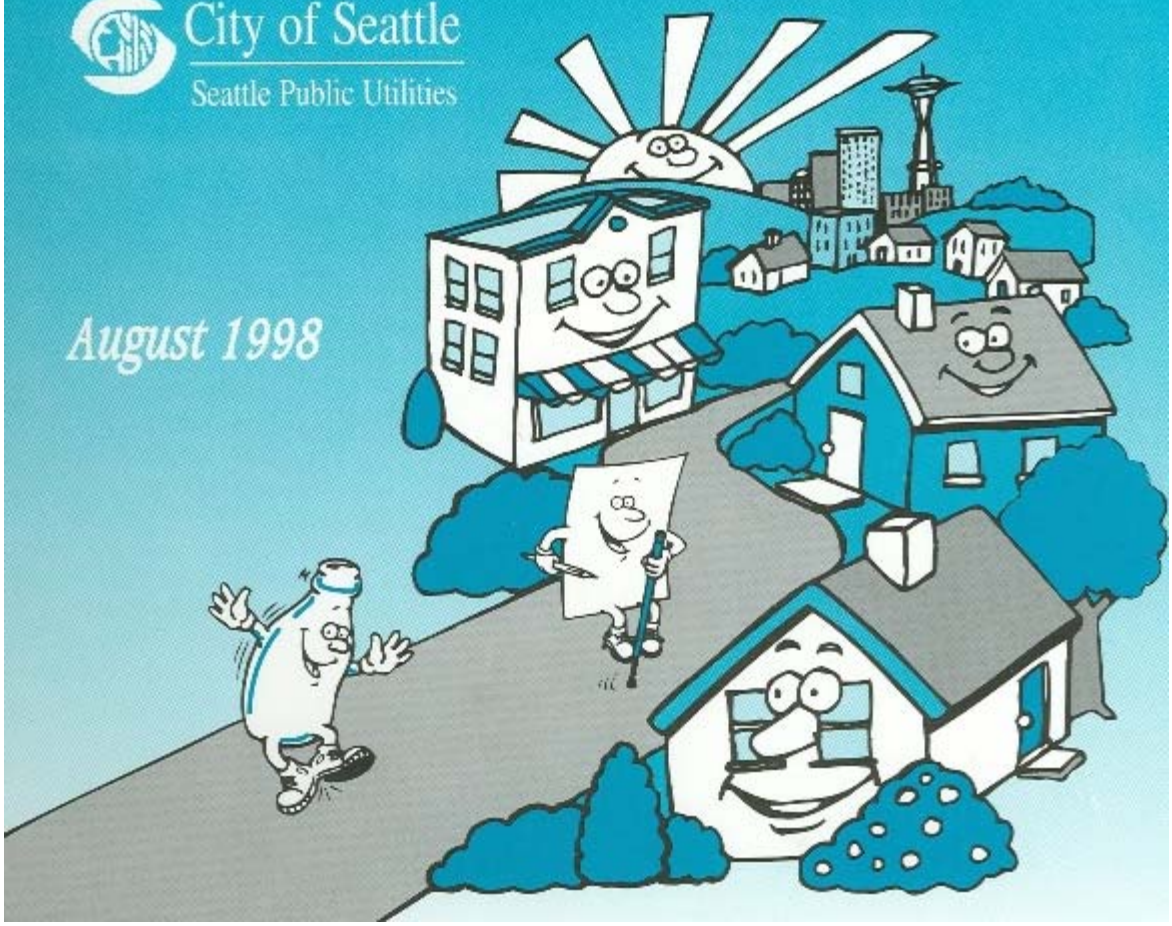
SEATTLE'S SOLID WASTE PLAN

On the Path To Sustainability

City of Seattle
Seattle Public Utilities

August 1998



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Seattle's Solid Waste Plan

On the Path to Sustainability

Adopted August 31, 1998

DEDICATED TO THE PEOPLE OF SEATTLE

— without whom past successes would have been impossible

— with whom the promise of the future lies.

None of Seattle's ingenious programs to reduce, reuse, and recycle would have been so effective without you.

We take this opportunity to thank you.

City of Seattle
Seattle Public Utilities

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How to Read this Plan

In our effort to make this Plan enjoyable to read, we've continued the traveling metaphor of the 1989 Solid Waste Plan, *On the Road to Recovery*. We've presented the Plan as a guide to continuing *On the Path to Sustainability* – the City's ultimate goal as expressed in the 1994 Comprehensive Growth Management Plan, *Towards a Sustainable Seattle*. Of course for any journey to be pleasurable, it helps to prepare as an armchair traveler – recalling past journeys, reading about all the sights to see, and planning possible itineraries. So make yourself comfortable and get ready to enjoy the trip!

Assembling the Information - Part 1

The journey to a Sustainable Seattle starts in Chapters 1-2 with a look at the past as prologue, so we're clear on where we've come from. Next the basic information we'll need is laid out: facts about Seattle's people and their waste, and how the City's solid waste system is managed and financed. Chapter 3 summarizes the extensive public process used to develop the plan. Chapter 4 stimulates the imagination by presenting a compelling vision for the future of waste management and goals to strive for as we begin the 21st century.

Considering the Options - Part 2

Chapters 5-10 present an array of options, as you'd expect from the best of travel agencies. Each chapter looks at one stage of the trip, or aspect of solid waste management. Each describes accomplishments since the 1989 Plan, current programs, needs and opportunities for the future, the goal, and the programs planned for the future.

The first "stage" is **waste reduction** – a strategy initiated in 1989 and emphasized in this Plan, followed by **recycling** – the major initiative of the past nine years with plenty of opportunity for improvement. Next comes the core of traditional solid waste management – the **waste collection, transfer, and disposal system**, with opportunities for continued improvements in efficiency and convenience. The next stages are avant garde strategies for **closing the loop** with product stewardship, market development, and sustainable building – strategies for producers as well as consumers to prevent waste before it happens and use products made from recycled materials. Finally, there are strategies for the City government's own solid waste practices – to increase waste reduction and recycling in its internal operations – and for Seattle Public Utilities to strengthen **community partnerships** by maintaining an ongoing dialogue with citizens and helping to create safe neighborhoods.

The Plan - Part 3

In Chapter 11 we finally put together an itinerary from all the possible choices. First we make clear the selection criteria for deciding what to include in our trip, and then describe the next stage on our solid waste journey. The Plan represents an ambitious agenda of improvements in waste reduction, recycling, and market development, with rate stability as an overriding goal and focus on education and incentives rather than mandates and requirements.

This Solid Waste Plan, adopted by City Council in August 1998, will chart Seattle's route along the path to sustainability as we enter the 21st century.

EXECUTIVE SUMMARY

Executive Summary

Overview

This Plan presents a new agenda for managing Seattle's solid waste in the beginning of the 21st century. This new vision for our future builds on achievements since our 1989 Plan, *On the Road to Recovery*. Strategies emphasized in this new plan, *On the Path to Sustainability*, represent a blend of program refinements and bold new initiatives. For the next decade, the City proposes to expand its internationally recognized recycling program, increase efforts in waste reduction and market development, initiate new product stewardship activities, and improve the City's own solid waste practices.

Public Review

A Public Review Draft Plan and Draft Environmental Impact Statement (DEIS) were released in May, 1998 for public review. The Plan was presented at a series of public meetings, presentations to community groups, and on the Seattle Public Utilities web page. The Plan and a summary pamphlet were distributed widely, and a hotline was set up to receive questions and comments. Two public hearings were held for the DEIS.

In addition to these general public comments, the City's Solid Waste Advisory Committee and a panel of nationally-known solid waste experts also commented on the Public Review Draft.

The Public Review Draft was revised based on input received, and a Final Draft Plan was prepared. The Final Draft was presented to the City Council along with a Final Environmental Impact Statement on August 6, 1998.

The Council held a public hearing on August 17, and adopted the Plan on August 31, 1998. (See Council Resolution in Appendix A.)

Background

People and Waste. The 1998 Solid Waste Plan was designed to respond to the current and future needs of Seattle's population and our waste practices. In the future, the City projects an increasing proportion of multi-family residents and expanding numbers of people working in the city. Currently, about half of all waste comes from businesses and one-third from single family residents. We now successfully recycle 44% of all wastes, but over 30% of the amount still being landfilled could be recycled in existing programs. Per resident and per employee waste generation rates have remained

fairly stable since 1989, while total waste is increasing due to growing population and employment.

The Collection, Transfer, and Disposal System. Residential garbage, yard waste, and recyclables are collected by private haulers under contract with the City. The City sets rates and bills customers. Residential garbage is transferred at City Recycling and Disposal stations and then shipped by rail to a private landfill in Eastern Oregon under a contract that expires in 2028. Yard waste is transferred at both City and private stations and then processed at a private facility. The current residential collection contracts end in March 2000. Procuring new collection contracts offers an opportunity to reconfigure the system, making it more efficient and equitable, and to add new services. The flow of materials from collection to transfer may change with the new contracts.

Seattle businesses pay private contractors to collect garbage and recyclables. The two commercial garbage haulers operate under franchises from the Washington Utilities and Transportation Commission (WUTC). Commercial garbage is hauled to private transfer stations and then shipped by rail to the landfill in eastern Oregon. Commercial recycling collection is offered by a number of private companies in a competitive system.

Funding. The City's programs and operations are covered by a self-supporting solid waste fund with no subsidies from the general fund or tax revenues. Since 1988, basic single family residential rates have increased slightly (a little over $2.00/month on the single can rate), less than the overall rate of inflation increase. Multi-family rates (paid by building owners) have increased nearly 11% more than inflation (about $25/month on a one-yard dumpster). Rate revenue pays for garbage, yard waste, and recycling collection and garbage disposal, as well as for closure of old landfills, moderate risk waste management, and litter and graffiti clean up.

Values and Goals

This Plan has been developed based on extensive feedback from customers, citizens, stakeholders, and City staff over the past several years, with a focus on three key values identified during that process:

- Protecting public and environmental health.
- Improving cost-effectiveness and system efficiency.
- Responding to customer and community needs.

The plan envisions a future in which we continue to improve our waste management practices on the path to a more sustainable future.

For the next steps along this path, the City has set the following eight goals with zero waste as a guiding principle.

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

Programs For The Future

The Plan identifies six major solid waste program areas:

- Waste Reduction.
- Recycling.
- Waste Collection, Transfer, and Disposal.
- "Closing the Loop" – Market Development, Product Stewardship, and Sustainable Building.
- The City's Own Solid Waste Practices.
- Community Partnerships.

For each program area, the Plan describes current programs and accomplishments since adoption of the 1989 Plan, needs and opportunities for the future, the overall goal, and programs planned for the future.

The Plan was developed to support the overall framework of Seattle's 1994 Comprehensive Growth Management Plan, *Towards A Sustainable Seattle*, which brought the widely-shared values of healthy communities, environmental stewardship, economic opportunity, and social equity together in the overarching concept of "sustainability." The Solid Waste Plan also builds on the City's commitment to environmental stewardship through pollution prevention, waste reduction, recycling, and conservation, which was affirmed in the 1992 *Environmental Action Agenda*.

Future programs are based on the following policies:

Maximum Waste Reduction. The City will make waste reduction a major program priority as part of an integrated campaign to increase our conservation of water, energy, and other resources. Not

producing waste is by far the cheapest and most environmentally responsible option for managing any kind of waste. Waste reduction has always been the top priority in the widely accepted waste management hierarchy. That is, we want to first reduce and reuse what we can, *then* recycle, *then* dispose of the rest.

Partnerships and Volunteers. The City will work in partnership with other agencies, the private sector, and advocacy groups to increase the vigor of its education and incentive programs. The City also proposes to coordinate its own conservation messages, and to extend its partnerships with neighborhood residents, businesses, and volunteers as stewards of their communities.

Recycle 60% by 2008. Current programs will be maintained, and new programs introduced to keep Seattle moving aggressively towards its 60% recycling goal. New program opportunities as well as strong educational outreach and incentives will remain the primary strategies for promoting voluntary program participation. However, the City will propose mandates if sector goals are not being achieved: 70% for single family, 37% for multi-family, 63% for businesses, and 39% for self-haul customers. This is particularly the case for multi-family recycling. If participation does not increase significantly within the next two years, the City will require building owners to sign up for recycling.

Collection and Transfer System In March 2000 the current residential contacts for garbage, yard waste, and recyclables collection will end, and new contracts will start. The City's contracting process encourages competition. New contracts will allow for more flexibility and coordination in providing services.

The new contracts will probably involve some service changes for all single family customers. During the contract procurement process, decision makers will balance opportunities for cost savings and efficiency with customer service issues.

The City is also in the process of contracting for commercial garbage collection, a service currently franchised by the Washington Utilities and Transportation Commission (WUTC).

Increased Market Development. The City will play a more active role in developing markets for recycled and recyclable products, in partnership with other agencies and the private sector. Achievements in market development – along with waste reduction – have lagged behind Seattle's success with recycling. If recycling is to continue to grow and become more economically stable, increased market development efforts are critical.

Individual Responsibility and Stewardship. The City will focus on encouraging both consumers and producers to take individual responsibility for managing wastes. A sustainable future depends on participation by everyone.

The program actions that will support these polices are listed in Tables 11.1 - 11.6. They include:

- Expand support for back yard composting and grasscycling.
- Implement variable yard waste rates.
- Increase waste reduction education for residential and business consumers.
- Add new materials to residential curbside collection
- Provide recycling collection to small businesses through the residential curbside collection program where appropriate
- Implement a vigorous campaign to encourage multi-family building owners to sign up for recycling, and mandate sign up if 80% of buildings are not signed up by 2000.
- Implement major education campaigns to maximize recycling by commercial, single family, and self-haul customers.
- Build a recycling center at the South Recycling and Disposal Station (including new opportunities to recycle construction debris), and consider acquiring property near the North Station for expanded recycling.
- Provide recycling containers in public places.
- Develop more local markets to process and use materials collected in our curbside programs.
- Expand capacity for processing food waste and yard waste.
- Encourage producers to reduce packaging.
- Support programs for voluntary take-back of selected wastes.
- Make a major effort to increase waste reduction and conservation by City Departments.
- Implement sustainable building in City construction projects

Alternatives Proposed in the Draft Plan

The Public Review Draft Plan presented alternative proposals for Seattle's solid waste future: Status Quo, a Recommended Alternative, and modifications to the Recommended Alternative.

Status Quo (No Change) Alternative. This alternative included current levels of effort for waste reduction and sustainable building programs, and minimum involvement in market development. It included current curbside collection programs with no additions or changes (except service changes that would be inevitable as a result of new contracts). Status Quo programs were projected to achieve 49% recycling by 2008.

Recommended Alternative. The alternative recommended in the Public Review Draft was similar to the adopted Plan. It included essentially the same goals and programs for waste reduction, community partnerships, and "closing the loop" efforts (market development, product stewardship, and sustainable building).

The Recommended Alternative proposed a recycling goal of 53%, and assumed continuation of education and incentives that would encourage voluntary participation. It proposed setting goals for multi-family and commercial sectors, and considering future mandates if goals were not achieved.

The Recommended Alternative contained specific strategies for improving the cost-effectiveness of the residential collection and transfer system: every-other-week collection citywide for recycling and yard waste, and commingled collection of recyclables. It also proposed a variable yard waste rate.

Modifications to the Recommended Alternative. Several alternative programmatic options were discussed, but not recommended, in the Public Review Draft. The proposed modifications generally were more aggressive, with an emphasis on mandatory rather than voluntary participation in recycling, stronger incentives for waste reduction, and a highly mechanized sorting facility for self-haul waste. With these modifications, a recycling rate of up to 70% was projected.

Chapter 1: Seattle's People and Their Waste

"It is a great mistake, my dear Watson, to theorize in advance of your data."

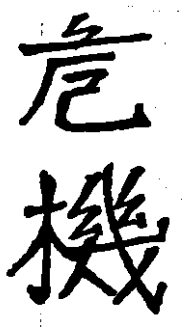
— Arthur Conan Doyle

Chapter 1 begins with a brief look at the past decade's journey from crisis to an international reputation as a leader in municipal recycling. We then summarize who we are: our current and projected population, our household types and sizes, and our occupations. We also probe the depths of Seattle's waste: what we throw away, how much is landfilled and how much is recycled, how the waste from residents and businesses compares, who handles our waste, and how the system is managed.

Past as Prologue

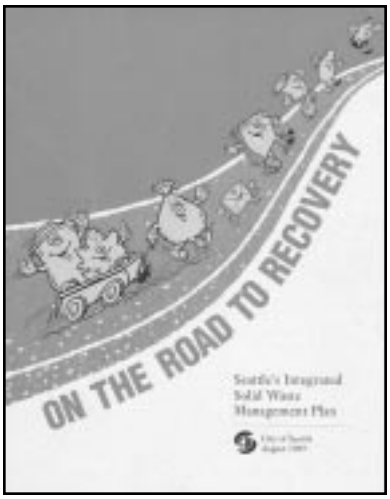
In 1987 Seattle's waste management system faced a crisis. Our last two landfills, closed in 1983 and 1986, had become Superfund sites that would cost more than $90 million to make environmentally safe. We began hauling our garbage to the King County landfill which increased customer rates by 82 percent. The City's contract with the County required us to find an alternative disposal site by 1993 or be locked in for the next four decades. Seattle thought there must be a less expensive option, and set out to find it.

The Solid Waste Utility[†] 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.



The Chinese symbol for crisis is the same as the symbol for opportunity.

[†] Until 1997, the Solid Waste Utility (part of the Seattle Engineering Department) was responsible for all solid waste planning and management. In January 1997 solid waste staff were incorporated into the new Seattle Public Utilities, which provides water, drainage, and wastewater services as well as solid waste management.



Progress Since 1989

In 1989, Seattle's Comprehensive Solid Waste Management Plan, *On the Road to Recovery*, set seven goals for the City. Progress toward these goals is summarized in chapters indicated below:

- To reduce as much as possible the volume and toxicity of waste generated in the City (see Chapter 5).
- To reduce, recycle, or compost 60% of total waste generated by 1998 (see Chapters 5 and 6).
- To dispose of non-recyclable waste in an environmentally safe landfill (see Chapter 7).
- To complete closure of the Midway and Kent Highlands landfills in an environmentally safe manner (see Chapter 7).
- To increase the cost-effectiveness and efficiency of utility operations (See Chapter 7).
- To stabilize rates (see Chapter 2).
- To improve customer service and other community relations (see Chapter 10).

Seattle seized the opportunity. The City Council directed the Utility to figure out how much recycling could be done for the cost of incineration, and to propose alternative ways of handling the remaining waste.

Since private businesses and non-profit organizations were already recycling 28% of our garbage – much more than most cities – Seattle used the crisis as an opportunity for an experiment in waste reduction and recycling that had never been attempted on so large a scale.

In 1989, with adoption of its Solid Waste Plan, *On the Road to Recovery*,[1] Seattle decided to take a new direction:

- To provide curbside recycling and yard waste collection for residents.
- To work towards reducing, recycling, or composting 60% of all wastes by 1998.
- To landfill remaining wastes in an arid landfill.
- To ban yard waste from curbside garbage.
- To set up a rate structure to encourage recycling.
- To create an education program that would show citizens how to achieve waste reduction and recycling goals, and give them tools to do it.

Since 1987, Seattle has led the world in reducing, reusing, and recycling. The new program made it easy for people to recycle. It saved money. It preserved resources. Some parts of the program started up quickly while others lagged behind, and some parts just didn't work. But as residents and businesses, office and field workers embraced recycling, Seattle's program became a byword among cities, a success story acclaimed worldwide. Sydney and Seoul, New York and Kyoto, Munich and Milan – all sent representatives to reap the benefits of Seattle's experience.

Why? Because Seattle increased recycling from 28% of its wastes in 1988 to 44% in 1995; single family homes recycled 60% of their waste in 1995. We've made long strides towards understanding and practicing waste reduction; 94% of City residents have said they believe reducing waste is important.[2] Citizens everywhere in Seattle shared in this success: residents in homes and apartments from White Center to Lake City, from Alki Point to Genesee Park, and businesses ranging from Boeing and the University of Washington to Central Co-op and street espresso carts.

In 1998 we are no longer in crisis. The present system works. Seattleites are satisfied – over 90% say very satisfied[3]– with how we manage our waste.

In addition to keeping garbage out of landfills by reducing waste and recycling, Seattle has a long-term disposal contract for landfilling that helps keep remaining garbage costs low. The City's Recycling and Disposal (transfer) station staff have improved operational efficiency while expanding services.

Seattle has traveled far along the Road to Recovery. Our commitment to recycling has made a difference in money saved and resources conserved. We are now world leaders in recycling, and we've reduced the amount of waste landfilled each year. However, the average amount of material individuals put out for collection (garbage, recyclables, and yard wastes) hasn't changed since 1988 and the total amount continues to increase. The only difference is that we now separate it into different containers. Our next challenge is to truly reduce the amount of "stuff" we use and discard. This future direction is described in the vision and proposed goals found in Chapter 3.

WHO WE ARE: SEATTLE'S PEOPLE

From the garbage collector's point of view, all of us who live, work, or visit in Seattle are waste producers.

In the midst of the rapidly growing Puget Sound region, Seattle is already densely settled and is growing slowly. In 1995 we were 533,660 residents – an increase of 25,760 (5%) since 1988. Current projections estimate by 2014 we'll increase another 4% to 554,360 residents.[4]

In 1988, Seattleites lived in 230,540 households, averaging 2.11 persons per household. In 1995, we lived in 247,770 households averaging 2.07 persons each. With population growing and household size shrinking, by 2014 the number of households is projected to be 270,290, with an average household size of 1.98 persons.

More of us are living in multi-family housing (26% in 1988 and 30% in 1995) and this trend is expected to continue. By 2014 population density is expected to increase, with 35% of us living in multi-family housing. Figure 1.1 shows how the number and composition of households has changed and is predicted to change over time. Figure 1.2 shows trends in single and multi-family population.

The solid waste Seattle has to manage is much influenced by numbers of employees and types of businesses in the City. Each day, about as many non-residents commute to work in Seattle as live in the city! The number of people working in Seattle is increasing rapidly. Between 1988 and 1995, employment increased by 16% and

Seattle's Population

For analytical purposes, we put Seattle's people and businesses into four categories.

Single family residential (1-4 households per building).

Multi-family residential

(five or more households per building).

Commercial (includes

manufacturing, trade, restaurant, non-office service, office and government, health, groceries, and schools).

Self-haul (includes members of the above

three categories who haul their own wastes and recyclables to City and private transfer stations).

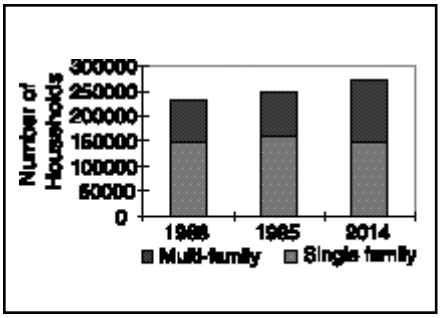


Figure 1.1 Household Trends

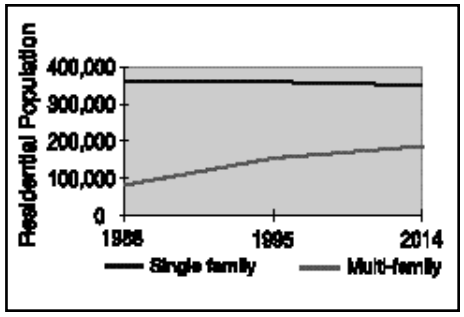


Figure 1.2 Residential Population Trends

Recyclables, Compostables, and Garbage Defined

Recyclables: Everything that can be recycled at present – such as glass, metal, aluminum, cardboard, and newspaper – whether in a collection program, transfer station, or private recycling facility.

Compostables: Everything that can be composted – such as grass clippings, prunings, and vegetative food waste – whether in a collection program, transfer station, or in your backyard.

Garbage: Everything that's left over. What can't be recycled or composted must be landfilled.

When we talk about our recycling rate we include both recyclables and compostables.

Waste GENERATED = Waste RECYCLED & COMPOSTED + Waste LANDFILLED

is expected to increase another 25% by 2014. As we move into the future, the proportion of jobs in different employment sectors will remain relatively stable, with some shift away from manufacturing and trade and a more rapid increase in health-related jobs. Although the greatest growth is in the health field, the greatest number of jobs will still be in the office and government category. (See Table 1.1.)

WHAT WE THROW AWAY: SEATTLE'S WASTE

As we live our lives, leftovers build up. What doesn't go into the sewer system we call solid waste. Mattresses, milk jugs, pop tops, old socks, apple cores, broken dishwashers, yesterday's newspaper, broken chain saws, dead light bulbs, sheetrock scraps, disposable cameras, and blunt razors are among the things we discard.

Solid waste is divided into several categories based on how it is handled and regulated. This Plan is concerned mostly with Municipal Solid Waste (MSW): all the garbage, yard waste, and recyclables that Seattle residents and businesses set out for collection or haul to a City Recycling and Disposal station. It includes some materials and items that need special handling, such as old refrigerators and tires.

Another important category of waste covered in this Plan is construction and demolition (C&D) debris . This includes materials such as wood, asphalt shingles, concrete, metal, rocks, brick, and drywall. Some construction materials are disposed of in residential and commercial garbage and at the City's Recycling and Disposal stations, and treated as if it were MSW. However, if construction waste is separated at a construction or demolition site, and taken to special facilities, it is no longer measured as MSW.

Moderate Risk Wastes (MRW) are discussed briefly in this Plan, because the City is responsible for managing them. They are hazardous or toxic chemicals exempt from State regulation as hazardous wastes because they come from home uses or in specified small quantities from businesses, institutions, government agencies, and others. MRW includes used motor oil, pesticides, antifreeze,

Employment Sector	Mfg.	Trade	Restaurant	Non-Office Service	Office & Gov't	Health	Food Stores	Education	TOTAL
1988	59,376	57,929	20,109	50,809	163,747	31,114	7,252	33,036	423,372
1995	58,972	64,174	23,576	64,149	190,056	40,480	8,331	40,441	490,179
2014	61,907	68,456	36,706	73,426	244,566	62,554	10,714	48,782	607,111

Table 1.1 Wage and Salary Workers in Seattle

paint, and solvents. MRW is discussed in more detail in the Seattle-King County *Local Hazardous Waste Management Plan*.[5] When households generate MRW, it's called Household Hazardous Waste (HHW). When businesses and others generate MRW, it's called Small Quantity Generator Waste (SQGW).

Other special categories of waste include biosolids (treated sewage sludge) and biomedical wastes.

Municipal Solid Waste[6]

How Much MSW Does Seattle Make?

In 1995, Seattle residents, workers, and visitors generated approximately 765,000 tons of waste (garbage plus recyclables and compostables). This is 115,048 tons more than in 1988. However, the average amount of waste generated by individual residents and workers has stayed relatively stable at approximately 2.7 lbs/day for residents, and 4.2 lbs/day for workers.

How Much Is Recycled? How Much Is Landfilled?

Of the 765,000 tons of waste generated in 1995, 19,000 tons were composted or grasscycled in people's back yards; 320,000 tons were recycled or composted through collection programs, recycling drives, or drop-off at Recycling and Disposal stations and other places. The remaining 426,000 tons went to the City's contract landfill in Eastern Oregon. (See Figure 1.3.)

Although total waste has increased over the past eight years, the amount of waste being landfilled has decreased by 8.5%, from 465,600 tons in 1988 to 426,000 tons in 1995. At the same time, the amount of waste being recycled and composted has increased 84%, from 184,000 tons in 1988 to 339,000 tons in 1995.

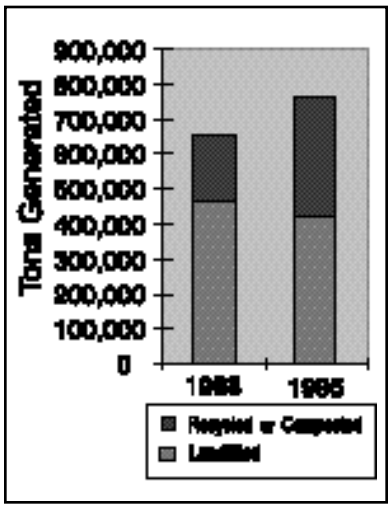


Figure 1.3 Waste Recycled or Composted and Landfilled

Who's Making All This Waste?

Almost one-half of all waste comes from businesses and nearly a third from single family residences. Residents of multi-family buildings generate less than a tenth of all Seattle's waste. The remaining waste comes from self-haulers (people who bring wastes directly to transfer stations). Self-haulers who drive cars are mostly residents; of those who drive trucks, 36% are residents and 64% are from businesses. (See Figure 1.4.)

Since 1988, the proportion of commercial waste has grown very slightly, and the proportion of single family waste has shrunk a little. In the future, as the population in multi-family housing increases, we can expect waste from that sector to increase proportionally.

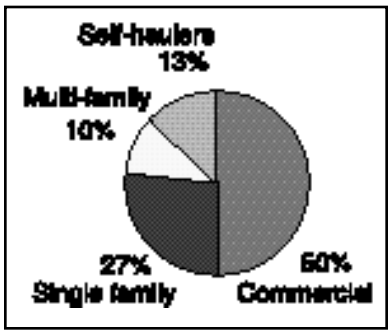


Figure 1.4 Sources of Waste, 1995

Figure 1.5 Waste Generated, Recycled and Landfilled, 1988

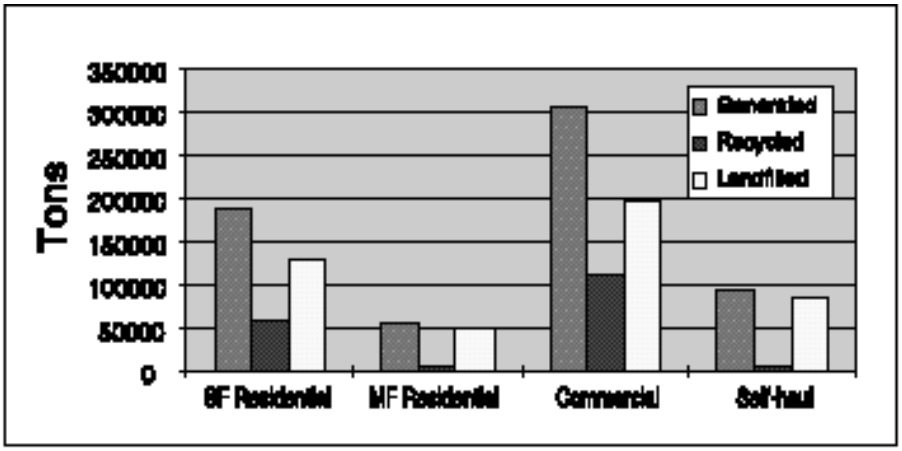
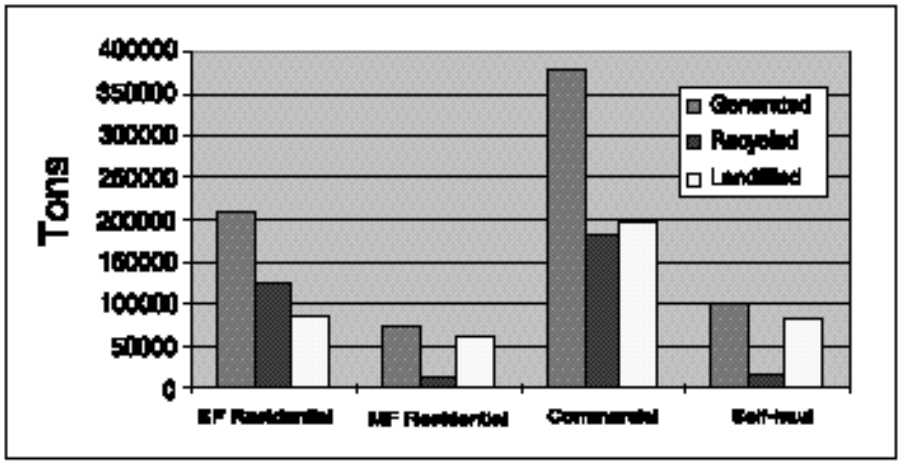


Figure 1.6 Waste Generated, Recycled and Landfilled, 1995



In 1995, single family households (70% of the population) generated 74% of all residential waste, while multi-family households (30% of the population) generated 26% of all residential waste. These proportions have changed very little since 1988.

Multi-family residents and self-haulers have the lowest recycling rates (percentage of total tons generated that are recycled), but they also make the fewest tons of waste. The self-haul recycling rate is low, in part because Recycling and Disposal stations have limited facilities for separating recyclables, and in part because self-haulers don't have an economic incentive to recycle if they bring in loads that contain garbage as well as yard waste and recyclables. Multi-family recycling is low partly because the City's collection program started after single-family recycling, and not all buildings are participating yet.

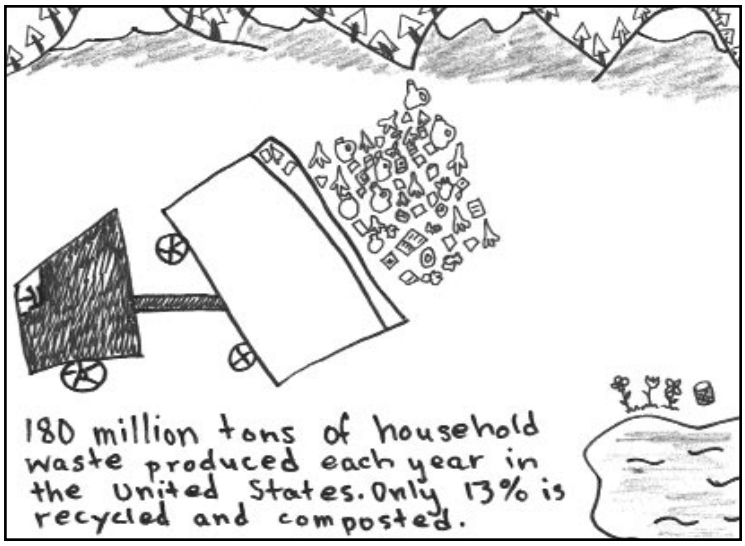
Figures 1.5 and 1.6 show wastes generated, recycled, and landfilled by different sectors in 1988 and 1995.

What's in the Garbage?

The composition of the garbage that goes to the landfill has changed since 1988 because we compost and recycle more; less yard waste or paper is in the garbage today because more is separated out. We recycle about twice as much now as we did in 1988.

Nevertheless, the garbage still contains many tons of materials that can be recycled through programs currently in place. (See Table 1.2.) By far the greatest tonnage of recyclables still in the garbage are paper products – newspaper, cardboard, and mixed paper – nearly 87,000 tons altogether.

In 1995 about 1,275 tons of garbage didn't go into garbage containers, but was thrown out as litter or illegally dumped onto streets and vacant lots, into ravines, under freeways, and on parking strips throughout Seattle. This material includes couches, mattresses, fast food containers, bottles, and paper.



Construction and Demolition Debris

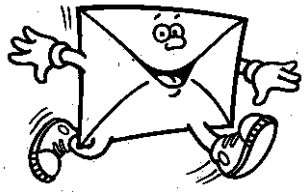
A sizable portion of the City's waste consists of construction and demolition (C&D) debris. Historically most C&D debris has been disposed of separately from MSW and does not get measured as MSW. It is separated because the requirements for landfilling "inert" C&D debris are less stringent than for garbage. C&D debris is increasingly being separated for recycling.

In 1995:

- About 67,000 tons were thrown into residential, commercial, or self-haul garbage. In addition, several thousand tons of clean wood waste and metals were recycled at the City Recycling and Disposal stations. These tons are included in the discussion of MSW wastes above.

Materials	Single-family	Multi-family	Commercial	Self-haul
Newspaper	3,245	5,661	4,605	493
Cardboard	4,290	4,632	16,341	2,668
Mixed paper	8,830	7,583	25,094	3,246
Yard waste	3,092	2,089	4,736	3,969
#1 & #2 plastic	619	514	1,262	348
Tin cans	1,232	931	1,964	97
Other ferrous metals	765	1,225	5,277	2,211
Aluminum cans	357	404	977	63
Glass	3,237	2,977	4,931	553
Clean wood waste	1,172	760	10,246	12,808
Total recyclables	**26,839**	**26,776**	**75,433**	**26,456**

Table 1.2 Tons of Recyclables Still in the Garbage, 1995. A total of 137,641 tons of materials going into the garbage today could be recycled in existing recycling programs. Most of this is paper and cardboard. Multi-family residents could recycle nearly half the waste they throw in the garbage; self-haulers, single family residents and businesses could recycle nearly one-third of their waste.



- Another 119,463 tons were separated from MSW garbage and discarded at private transfer stations. The most common materials were painted or stained wood (7.5%), composition shingles (6.4%), mixed/demolition drywall (6%), new drywall (4.1%), and new lumber (3.8%).[7] Of all the disposed materials, approximately 40% is potentially recyclable.
- An unknown quantity is separated on the job site and hauled to local facilities that accept separated wood, gypsum, metals, and other construction materials for recycling. The number of these firms is increasing as more and more contractors establish job site recycling programs, and as new processors open up.

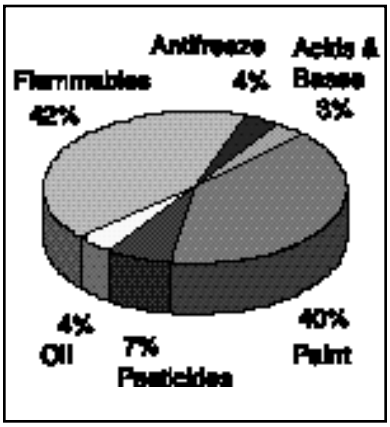


Figure 1.7 Household Hazardous Waste Collected at City Haz Sites, 1995

Moderate Risk Waste

The Seattle Municipal Code prohibits disposal in the garbage of Household Hazardous Waste (HHW) or Small Quantity Generator Waste (SQGW), but in 1995 SPU measured 670 tons of HHW in residential garbage, 949 tons of SQGW in commercial garbage, and 917 tons of combined HHW and SQGW in self-haul garbage. Although this represents less than 1% of the total tons, even small amounts can cause health risks, worker injury, and environmental problems.

The amount of HHW Seattleites and other King County residents brought to City Household Hazardous Waste Collection Sites (Haz Sites) has increased over the past six years to 320 tons in 1995. (See Figure 1.7.)

In addition, 140 tons of used motor oil, one ton of oil filters, and 42 tons of vehicle batteries were brought to the City Recycling and Disposal stations for recycling in 1995, and an unknown amount of oil was collected by local auto parts stores and gas stations.


SPU employee Brenda Thomas is well-protected as she sorts household hazardous waste dropped off at one of the City's Haz Sites.

Special Categories of Waste

Biomedical waste from medical, dental, and veterinary offices and hospitals is regulated by the King County health code. It must be collected and disposed by regulated companies. Sharps, such as hypodermic needles, are a type of biomedical waste that is accepted at City Recycling and Disposal stations and some pharmacies and doctors' offices for proper disposal.

Biosolids (treated sewage sludge) are managed by King County (formerly Metro) according to Federal regulations. Management strategies are described in the Regional Wastewater Services Plan.[8]

Endnotes

[1] City of Seattle, *On the Road to Recovery: Seattle's Integrated Solid Waste Management Plan*. 1989.

[2] City of Seattle, Solid Waste Utility. *City of Seattle Comprehensive Waste Management Plan Survey*. Elway Research Inc., December 1995.

[3] City of Seattle, Office of Management and Planning. *1996 Citywide Residential Survey, City of Seattle: Ratings of the Quality of Life in Seattle and Satisfaction with City Services*. October 1996.

[4] All population figures are derived from Seattle City Light's Economic and Demographic Model, 1996. They are based on predicted moderate population growth.

[5] King County, City of Seattle, Seattle-King County Department of Public Health, and the Suburban Cities Association. *Local Hazardous Waste Management Plan for King County: Final Plan (LHWMP)*. May 1997.

[6] Data from the City's waste stream composition studies, 1994 *Recycling Potential Assessment*, and Department of Ecology's annual recycling surveys; 1995 data are used because this is the most recent year for which we have a full set of figures.

[7] City of Seattle, Seattle Public Utilities. *Construction, Demolition and Landclearing Debris Waste Composition Study: Final Report*. Cunningham Environmental Consulting, et al., September 1997.

[8] King County, Wastewater Treatment Division. *Draft Regional Wastewater Services Plan*. Summer 1997.

Chapter 2: Solid Waste Management and Financing

"Good order is the foundation of all good things."

– Edmund Burke

This chapter describes the network of public and private organizations which are responsible for managing Seattle's solid waste. It also outlines the regulatory structure governing solid waste management, and the revenue sources, costs, and rate structure for Seattle's solid waste services.

Management of Seattle's Solid Waste

Seattle's waste is managed by a combination of services provided directly by the City, private companies under contract with the City, State-regulated haulers, and recycling companies operating in a competitive market.

In 1962, State law (RCW 35.21) gave cities express authority to control all garbage collection and residential recycling collection through exclusive contracts. At that time Seattle chose to exercise this right over residential wastes, but not commercial garbage. Commercial garbage collection is provided by two private companies under a State franchise. They must submit rate proposals to the State for approval.

The City manages contracts with private companies for the collection of residential garbage, yard waste, and recyclables. The City also contracts with Waste Management, Inc. for disposal of all non-recycled waste at its Arlington, Oregon landfill.

Department of Ecology Solid Waste Guidelines

This Plan is written in accordance with the 1989 Waste Not Washington Act (RCW 70.95) and the Department of Ecology's *Guidelines for Preparing Solid Waste Plans.* The State requires local governments to incorporate waste reduction and recycling into their solid waste plans, and establishes a hierarchy of waste management priorities:

1st Waste Reduction

2nd Recycling

3rd Incineration or Landfilling

Most solid waste plans are prepared by counties. Seattle prepares its own Plan because of its size and uniqueness within King County, and because Seattle wanted to make its own decisions about managing its wastes. However, Seattle's Plan is formally a part of the King County Solid Waste Management Plan, and must be consistent with that Plan.

In 1995 the City undertook a study of commercial garbage collection[1] which concluded customers would benefit through lower rates if the City exerted its control over commercial garbage collection. In 1996 the City initiated negotiations to enter into contracts with the two haulers that collect commercial garbage.

The City owns and operates two of the four Recycling and Disposal stations, also known as transfer stations, in Seattle. These two stations offer garbage and recycling services for self-haul customers, and provide transfer for residential garbage and yard waste. Two privately owned stations transfer commercial garbage, and accept separated C&D debris and a small amount of commercial self-haul waste.

A number of private companies compete for collection of recyclables from the City's businesses, and private facilities sort and process recyclables and yard waste.

For more details on how Seattle manages garbage, recyclables, and compostables, see Chapters 6 and 7.

THE REGULATORY FRAMEWORK

Washington State law assigns to local governments like Seattle primary responsibility for managing solid waste– from prevention and recycling to collection, transfer, and disposal (RCW 70.95).

The State gives cities like Seattle exclusive authority (RCW 35.21) to provide and set rates for solid waste services by using municipal workers, competitively bidding contracts to private companies, or developing interlocal agreements with a county or city to provide services. When a city doesn't exercise this authority solid waste services are provided by State-regulated private haulers (RCW 81.77 and 81.80). In January 1995, the federal government preempted the WUTC's authority to set rates and define service territories for commercial recycling.

The Seattle/King County Health Code (Title 10) covers rules for solid waste handling, incorporating the authority delegated to jurisdictional health departments by the State and implementing the State Minimum Functional Standards (WAC 173-304) as well as other requirements. The City also establishes rules relating to solid waste in the Solid Waste Code (SMC 21.36, 21.40, 21.43, and 21.44).

While the City is responsible for managing waste, several other agencies also have a role in waste management:

- **Washington Department of Ecology (DOE)**. Approves the waste management plan, establishes solid waste rules (Minimum Functional Standards - MFS), provides technical and grant assistance. Ecology also regulates landfill closure at the former Kent and Midway landfill sites.

- **Washington Utilities and Transportation Commission (WUTC).** Regulates rates and services of State-franchised garbage haulers. Currently, two State-regulated haulers in Seattle collect commercial Municipal Solid Waste (MSW) and three collect Construction and Demolition (C&D) debris. The WUTC also issues common carrier permits to commercial recycling haulers.
- **Seattle Department of Construction and Land Use (DCLU).** Issues land use and building permits to solid waste facilities consistent with local regulations.
- **Seattle/King County Department of Public Health (SKCDPH).** Enforces solid waste rules, issues operating permits for local solid waste facilities and collection vehicles; monitors historic landfills, screens waste for contamination or special handling needs; and issues clearance forms.
- **Oregon Department of Environmental Quality (DEQ).** Monitors the disposal of Seattle's waste at Waste Management of Oregon's landfill in Arlington, Oregon.

FINANCING SOLID WASTE SERVICES

What does it cost the City and private contractors to provide solid waste services in Seattle? Where does the revenue come from? This section addresses these questions.

Making waste costs money. Seattle residents and businesses spent approximately $76 million in 1995 on garbage, recycling, yard waste, and litter. A typical single family household in Seattle spends $240 each year dealing with waste. Businesses spend an average of around $1,000 per year.

In Seattle it costs less to recycle than to landfill our wastes. Between 1988 and 1995 Seattle residents saved over $12 million by recycling and composting rather than sending all their waste to a landfill. This translates to savings that average nearly $7 per year for each residential household.

Single family residents pay the City for what they waste when they pay their combined utility bill every two months. Self-haulers pay when they go over the scale at the recycling and disposal stations. Apartment dwellers probably don't see the bill because the building owner gets it, but they still pay in their rent. Businesses pay a State-franchised hauler or other private business to pick up their garbage and recyclables.

The City contracts for landfill disposal of garbage. Commercial as well as residential garbage is brought to the railhead for transportation to Arlington, Oregon. The City charges commercial haulers a per ton fee for garbage brought to the railhead. Commercial garbage collectors pass these costs on to their customers in their garbage bills.

Paying for City Solid Waste Services

The City provides the following services through its own staff and private contractors:

- Residential garbage, yard waste, and recycling collection.
- Recycling and Disposal station operations for garbage transfer and drop off of self-haul garbage, yard waste, and recyclables.
- Residential customer service and billing.
- Garbage disposal.
- Landfill closure (Midway and Kent landfills).
- Litter, graffiti, and illegal dumping programs.
- Waste reduction, back yard composting, and grasscycling programs.
- Education and outreach to residents and businesses.
- Household hazardous waste collection and education.
- Solid waste planning and administration.

City Solid Waste Revenue

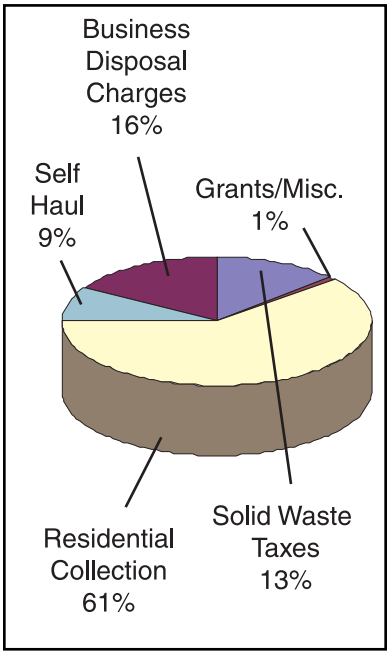


Figure 2.1 Solid Waste Fund Revenue Sources, 1995

As shown in Figure 2.1, there are four primary sources of revenues to the City's Solid Waste Fund: residential collection rates, self-haul fees, disposal tip fees, and solid waste taxes.

The fund was established in 1961. State and City laws require this fund to be self-supporting with no subsidies for solid waste services from the City's general fund or tax revenues.

Residential collection rates and self-haul fees are set by the City Council, and are typically reviewed every two years to ensure they are adequate to meet anticipated costs. If necessary, the City Council changes the rates so revenues meet expenses. When the City contracts for commercial garbage collection in 2000, the City Council will set commercial as well as residential garbage rates as discussed in Chapter 6.

Regulated haulers pay the City a per ton disposal charge (tip fee) at the railhead for garbage generated in Seattle and disposed at the Arlington landfill under the City's disposal contract (see Chapter 7). The current rate is $62.20 per ton for rail haul and disposal. This fee is passed on to business customers in their garbage bills.

The City collects taxes on solid waste that is not recycled (SMC 5.48.055). A landfill closure tax of $11.70/ton is levied on all garbage collected in the City from both residents and businesses. All of this garbage passes through the railhead for transportation to the Arlington, Oregon landfill. As the name implies, these taxes are used primarily to support the costs of cleaning up and closing former landfills.

The City also charges a transfer tax of $8.80/ton on all Seattle-generated solid waste (garbage and construction and demolition debris) destined for garbage disposal, landfilling, or incineration. For solid waste generated outside the City, the transfer tax is $4.40/ton. These

taxes are used primarily for litter control and illegal dumping programs; taxes from City-generated tonnages are also used for solid waste system and planning costs.

Grants, interest income, and sale of recyclable material collected at City Recycling and Disposal stations make up a small portion of the City's solid waste revenue.

City Solid Waste Expenses

In 1995, the City spent about $75 million providing solid waste services, as shown in Table 2.1. The majority (60%) of the cost was for residential garbage, yard waste, and recycling collection, and garbage disposal services by private contractors. Another large portion of the cost (24%) went to State and City taxes and landfill closure work at Seattle's former Kent and Midway landfill sites.

Table 2.1 City Solid Waste Expenses, 1995

Services provided by private contractors	
Residential garbage collection	$12,000,000
Recycling and yard waste collection and processing	$7,400,000
Landfill garbage from residents and businesses	$19,700,000
Services provided directly by City staff, consultants, vendors	
General and administrative	$4,000,000
Transfer station operations	$3,400,000
Yard waste and garbage transport	$1,000,000
Landfill depreciation/amortization, operation, maintenance	$5,400,000
Household hazardous waste facilities and programs	$1,300,000
Waste reduction and recycling education programs, and solid waste planning	$2,100,000
Litter and graffiti clean-up	$2,100,000
Billing and customer service	$4,000,000
Taxes	
State and City taxes	$12,600,000
Total Expenses	**$75,000,000**

Paying for Private Service to Businesses

The State-franchised haulers bill their customers for the costs of garbage collection service. The rates they charge must be reviewed and approved by the Washington Utilities and Transportation Commission (WUTC).

Private companies compete to provide recycling services to Seattle businesses. Depending on market conditions and the quantity, quality, and type of material recycled, recycling companies may charge for collection, collect for free, or pay their customers.

Rates and Rate Structure

Residential Collection Rates

Seattle residents are required to subscribe to garbage collection service. We can't choose whether or not we pay garbage bills; we can choose the level of service. What we pay covers the cost of City services listed in Table 2.1. Collection and Recycling and Disposal station rates are structured so people have an economic incentive to recycle.

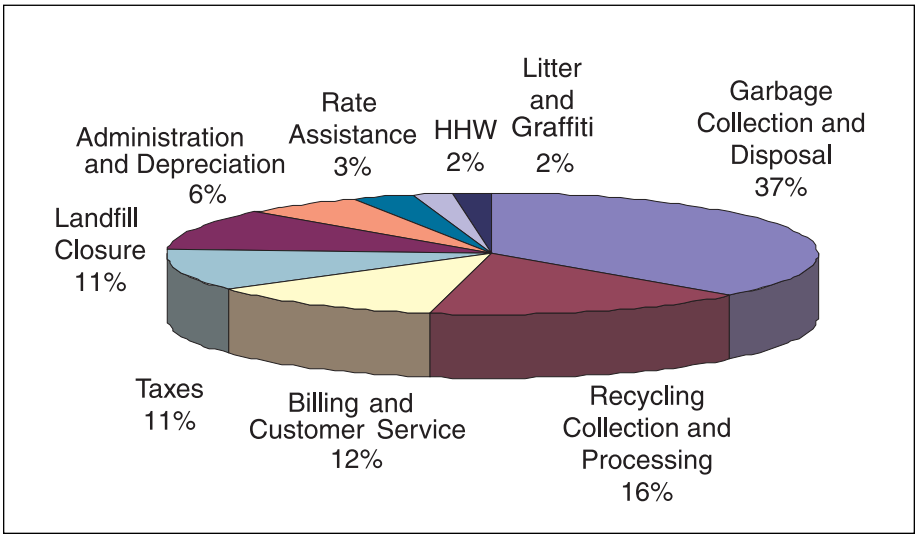
Garbage rates cover the costs of collecting and disposing of garbage, and collecting recyclables. Recycling costs are included in the garbage bill, but are not shown separately. The cost of recycling is lower than the cost of garbage, so recycling benefits not only individual residents, but the City as a whole. Recycling collection service is available to all residential customers. Some choose not to participate, which means they pay to dispose of all their waste as garbage. If they recycled, they would need a smaller garbage container and would pay less.

Very few single family residents choose not to use recycling services, but a number of multi-family building owners have not signed up (see Chapter 6).

Residents pay for yard waste collection with a flat monthly fee, also set at a level that encourages customers to use the service. Residents may choose whether or not to subscribe to yard waste pick up service. Yard waste is banned from garbage disposal, so the options are back yard composting, self hauling clean yard waste to an Recycling and Disposal station, or setting yard waste out for collection. Many people combine all three.

Typical single family residential customers in Seattle paid about $16.10 per month for solid waste collection services in 1995. (This does not include optional yard waste service of $4.25 per month.) As shown in Figure 2.2, garbage collection and disposal services were 37%, or $6.00 of the monthly rate, and recycling collection and processing were 16%, or $2.60 of the monthly rate. Household

Figure 2.2 What the One-Can Rate Pays For



hazardous waste services, also covered by residential rates, were about 2%, or $0.32 of the monthly rate. The remaining 45% of the average garbage bill goes for landfill closure, billing and customer service, and other expenses.

Figure 2.3 Garbage Can Sizes

Single Family Rates

Residents who live in single family, duplex, triplex, and four-plex residences pay for solid waste services based on the size of the garbage can they choose. Residents may choose any of the service levels shown in Figure 2.3. Residents may also choose to sign up for recycling collection service. The more they recycle, the smaller the garbage can they will need. The City provides free garbage cans and recycling bins to customers. Since 1988 there has been a significant reduction in the average can size used by single family residents, as shown in Figure 2.4.

Sometimes residents need to set out more garbage than fits in their regular can. If they do, the hauler notes the number of extra bundles set out, and customers are automatically billed. Alternatively, residents may use an extra garbage tag. Each extra bundle costs $5. Automatic billing for extra garbage started in 1995, partly to make it easier for customers, and partly to prevent cheating.

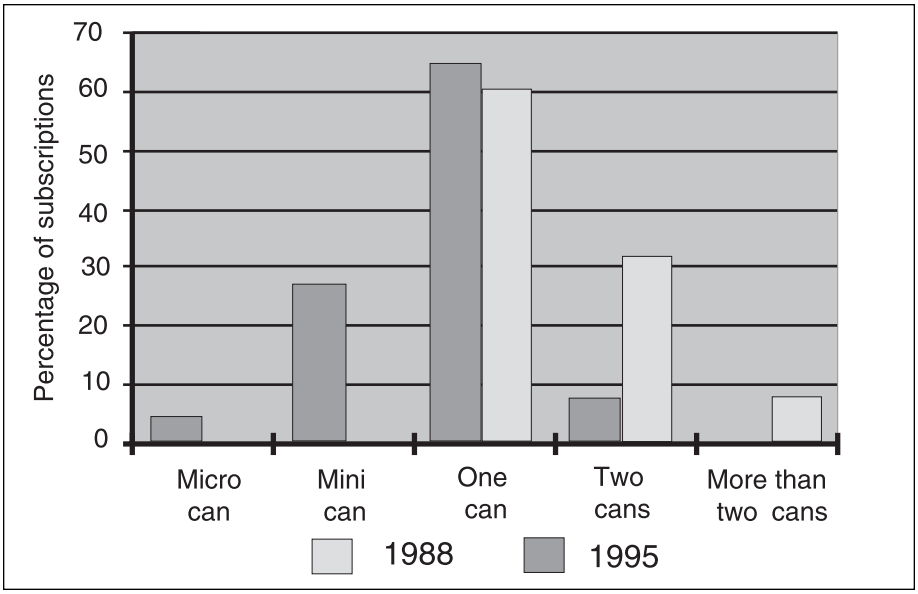


Figure 2.4 Subscription Levels for Seattle's Single Family Households, 1988-1995

Table 2.2 Monthly Single Family Garbage and Recycling Rates

	Curb/Alley Service†	Backyard Service	Low-income Assistance‡
Vacancy	$6.25	n/a	$2.50
Micro can	$10.05	n/a	$4.05
Mini can	$12.35	n/a	$4.95
One can	$16.10	$22.50	$6.45
Two can	$32.15	$45.00	$19.30
Three can	$48.25	$67.55	$35.35
Additional can	$16.10	$22.50	$16.10
Yard waste	$4.25	n/a	$2.15
Extra garbage or trash tags	$5.00 per bag per pickup	n/a	n/a
Bulky item pick up	$26.85 per item	n/a	n/a

Garbage and recycling rates are shown in Table 2.2. The vacancy rate covers recycling service, litter and graffiti clean up, low-income rate assistance, and landfill closure costs.

Approximately 8% of the City's single family residents qualify for low-income rate assistance. Customers who are old or disabled and unable to bring their containers to the curb may qualify for backyard collection at curb/alley rates. Able residents may also choose backyard collection, at a higher rate; 1% choose this service.

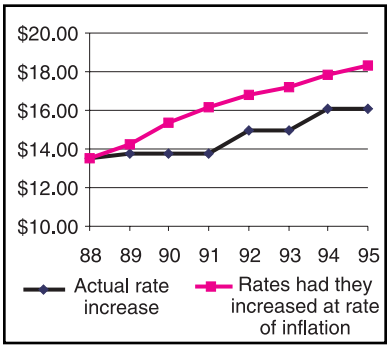


Figure 2.5 Single Family Residential Rates, 1988-1995

Money saved through recycling has helped keep single family residential rates fairly stable since 1988. Figure 2.5 shows the actual increase in single family garbage rates since 1988, and what rates would have been if they had increased at the local inflation rate.

The rate increases that did occur in 1989, 1992, and 1994 were driven primarily by general inflation (which increases the City's cost of doing business), the addition or expansion of new programs (primarily litter and graffiti cleanup and the City's household hazardous waste program), and the full inclusion of landfill closure costs in rates. Altogether, the average single family resident's bill is lower than it was in 1988. Customers cut their own rates by shifting

† In complexes with two to four units the price of service per unit is slightly less. For example, for a single family home, subscription to a micro can would be $10.05 per month. For a single family residential complex with three units, subscription to a micro can would be $9.75 per unit per month.

‡ Residents qualifying for low-income rate assistance include: (1) persons over the age of 65 or disabled persons prevented from working whose income (or combined income) is not more than 70% of the State median income; (2) persons receiving Supplemental Security Income; (3) persons requiring medical life-support equipment which generates a disproportionate amount of solid waste.

to smaller garbage can sizes (see Figure 2.4), which more than offset the modest increase in rates.

Customers who subscribe to yard waste collection, about 60% of single family residences, pay a flat monthly fee of $4.25. Customers provide their own cans and are limited to 20 bundles a month. This rate is lower than yard waste collection rates in other parts of King County, and does not completely cover the costs of providing service. Additional costs are covered through garbage rates. Bulky items such as appliances and furniture can be picked up as an optional service at a rate of $26.85 per item.

Table 2.3 Monthly Dumpster Rates for Weekly Pickup

Dumpster Service Level (weekly pickup, uncompacted)[˘]	**Monthly Rate (+$.60 per dwelling unit)**
1 one cubic yard	$82.15
1 1.5 cubic yard	$101.13
1 two cubic yard	$120.15
1 three cubic yard	$158.45
1 four cubic yard	$196.95
1 six cubic yard	$272.69
1 eight cubic yard	$350.35
1 ten cubic yard	$454.00
Extra garbage	$5.00 per 32 gallon
Bulky items pickup per item	$26.85

Multi-Family Rates

Owners of multi-family buildings (five units or more) pay for solid waste services based on garbage container size, number of containers, and frequency of pickup. Table 2.3 shows monthly dumpster rates for weekly pickup. More frequent pickup, up to six times per week, costs proportionately more. One cubic yard is equivalent to about six 32-gallon containers, so a ten-yard container can serve approximately 60 multi-family households per week.

As for single family residents, extra garbage rates are charged for overstuffed dumpsters and for extra bags of garbage that are set out. The charge is $5.00 per extra bundle.

Multi-family building owners can also sign up for free recycling pickup from one of the four companies that contract with the City to provide multi-family recycling service.

Between 1988 and 1995, multi-family rates for a one yard dumpster

[˘] Rates are approximately 200% more if the garbage is compacted.

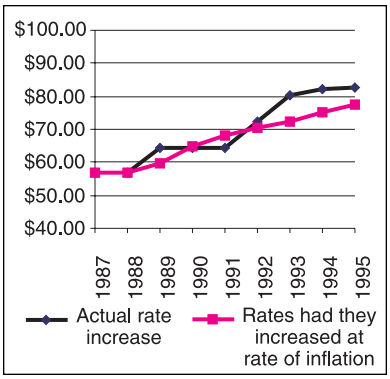


Figure 2.6 Multi-Family Residential Rates, 1988-1995

have increased about 10.8% above inflation, or 1.5% per year. Figure 2.6 shows actual rate increases and what rates would have been if they had increased at the rate of inflation only. Increases in dumpster rates were driven primarily by general inflation, the addition or expansion of new programs (primarily litter and graffiti cleanup, the household hazardous waste program, and the apartment recycling program), by substantial growth in the multi-family sector, and the full inclusion of landfill closure costs in rates.

Multi-family building owners may also choose to subscribe to yard waste collection. Rates and service are the same as for single family.

Recycling and Disposal Station Rates

Rates charged to City Recycling and Disposal station users vary depending on the kind of vehicle and the type of material. Cars, mostly residential, pay a flat fee per trip. Trucks with commercial license plates, about 60% business and 40% residential, pay by the ton.

Loads of yard waste and recyclable wood waste are charged a lower fee, and loads of other recyclables only are free. There are special rates for tires and appliances. Household hazardous waste can be dropped off for free, though actually residents are charged through their garbage bills (see Table 2.1). Customers with mixed loads of garbage plus yard waste or recyclables must pay the garbage rate because garbage and recyclables cannot be weighed separately. Recycling and Disposal station rates are shown in Table 2.4.

Table 2.4 Recycling and Disposal Station Rates

R&D Station Rates[§]	Cars	Cars & Trucks w/ Commercial Plates
Garbage	$8.50 per trip	$93.65 per ton, $15.50 min. charge
Yard waste	$6.50 per trip	$68.70 per ton, $10.75 min. charge
Wood waste	$4.50 per trip	$48.05 per ton, $6.25 min. charge
Recyclables	Free	Free
Tires	$7.50 per load (limit four tires/load)	$7.75 per load (limit four tires/load)
Appliances (max. 2 per load)	$15.25 per appliance	$15.25 per appliance $5.40 per appliance if load combined with garbage, etc.
Unsecured loads	$3.00	$5.00 if load is less than a ton $10.00 if load is greater than a ton

[§] Anything combined with a garbage load (whether or not it is recycled on-site) is charged the garbage rate.

Nearly three quarters of the Recycling and Disposal station rates cover the operational costs of managing self-hauled garbage. (See Figure 2.7.)

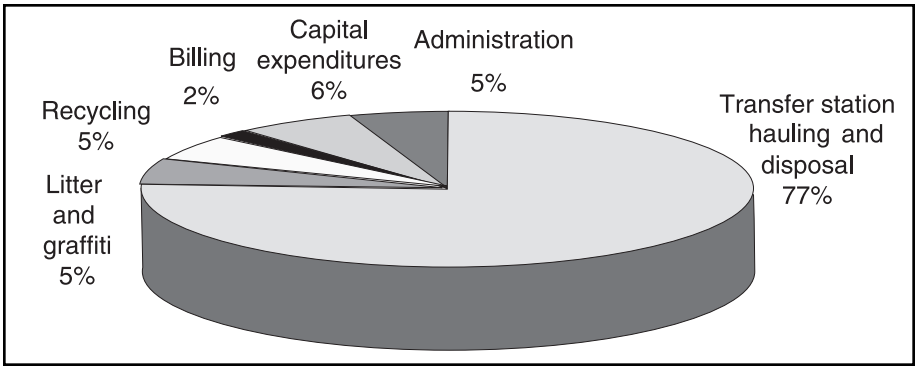


Figure 2.7 What Our Recycling and Disposal Station Rates Pay For

Rates for both self-haul cars and trucks have increased more rapidly than inflation since 1988 (about 6% per year above inflation for cars and 3% per year for trucks). The City has been working gradually to eliminate the very large subsidy car customers have received over the years. The primary cause of the increase in truck rates has been general inflation and the addition or expansion of new programs, particularly litter and graffiti. The City began including a small portion of landfill closure costs in the Recycling and Disposal station rates in 1994.

Figure 2.8 shows actual increases in car and truck rates since 1988, and what rates would have been if they had increased only at the rate of inflation.

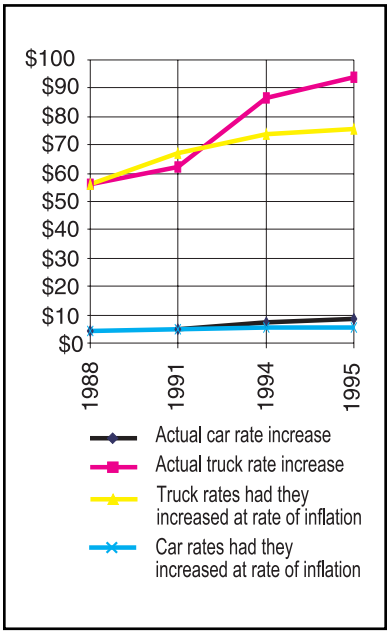


Figure 2.8 Recycling and Disposal Station Rates 1988-1995

Endnotes

[1] City of Seattle, Solid Waste Utility. *Review and Analysis of Local Regulatory Options: Improving the Efficiency and Effectiveness of Commercial Garbage Collection*. Stevens and Teng, January 1995

Chapter 3: Customer Opinions and the Plan Development Process

"We don't inherit the earth from our ancestors. We are stewards for our children."

— Chief Sealth

This chapter reviews the extensive public process used to develop this Plan. A detailed description can be found in Appendix A.

Preparing for the Plan

The preparation of this Plan has included several drafts incorporating responses and ideas from stakeholders and the public, from solid waste experts and the citizens' Solid Waste Advisory Committee, and from City decision-makers and staff.

Since *On the Road to Recovery* was published, Seattle has frequently sought and received opinions from the public about existing programs and possible new programs. Much input has come from surveys assessing needs, attitudes, and behavior which have helped revise and focus programs and educational efforts. Some of the more recent surveys are summarized in Appendix B.

Members of the Solid Waste Advisory Committee

In 1995 the former Solid Waste Utility undertook a formal process to gather citizen opinions to prepare for developing the new Plan. This process included a citizen survey, focus groups, presentations to 12 neighborhood and community councils, and a bill insert and hotline. Some of the things you told the Utility are list in the sidebar on the next page.

What You Told Us[1]

Of four hundred residents surveyed:

- 84% reused shopping bags.
- 71% bought in bulk or with less packaging.
- 60% had reduced their use of disposable products.
- 54% repaired or re-used furniture, appliances, or clothing.
- 48% grasscycled (left grass clippings on the lawn); and 47% composted.
- About 85% recycle now and want to recycle more.
- 72% of single family residents preferred same day pick up of garbage, recycling, and yard waste.
- 80% of transfer station users thought it was important to have separated areas for garbage, yard waste, and recycling so people didn't have to wait in the same line.
- 82% thought it was important to spend money on litter, graffiti, and illegal dumping.

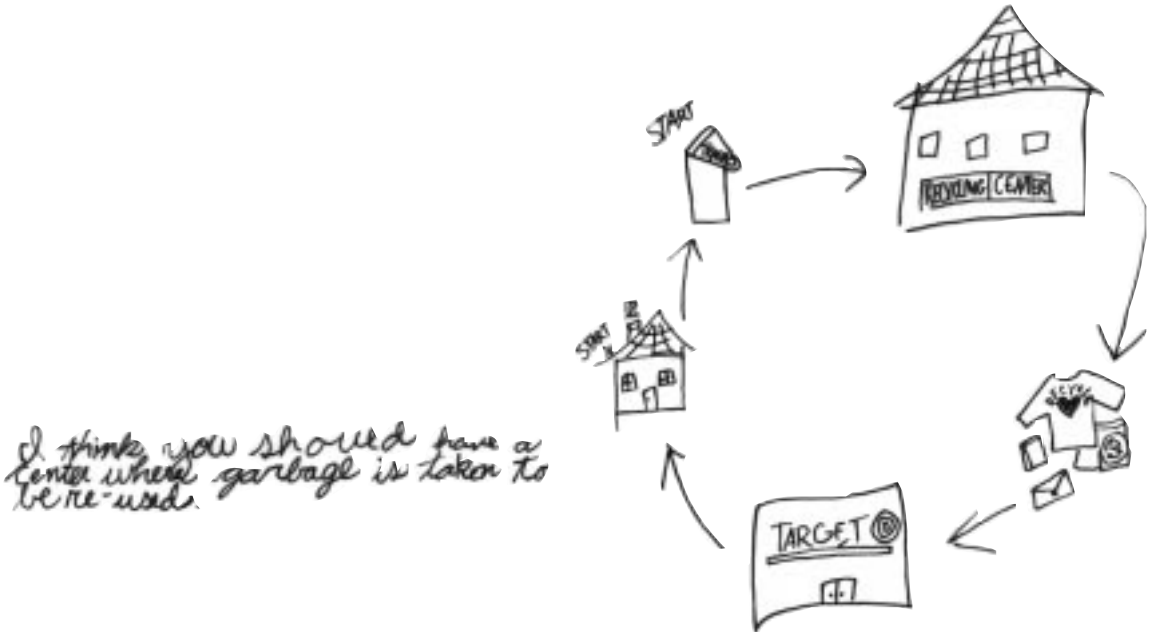
The Solid Waste Advisory Committee includes up to 15 citizens appointed by the Mayor to advise the City on its solid waste plans and activities, as required by State law. The Committee, which meets biweekly, includes business people, residents, and representatives from recycling and disposal companies.

Seattle Public Utilities (SPU) also gets information from residents over the telephone. In addition to complaints about missed pickups (which tell us how our contract haulers are doing), many propose changes or additions to solid waste services. The most common comments are from people who want more frequent recycling collection in the south end, those who want to recycle more plastic, and those concerned about litter from recycling and garbage cans.

The Draft Plan

Working Draft

SPU prepared a Working Draft for this new Solid Waste Plan in January 1998. The Working Draft included a wide array of potential new initiatives and alternative strategies which resulted from two years of extensive public involvement and internal program analysis. Staff analysis included extensive computer modeling of alternative strategies, using the Recycling Potential Assessment (RPA) and System Analysis computer model to estimate program results and costs for all alternatives. (The computer model is documented in the Technical Support Document.) In addition, experts from around the



country were consulted in a series of symposia, co-sponsored by King County, which focused on the next generation of solid waste technologies and strategies.

Stakeholder Review

Representatives from various stakeholder groups were invited to review the proposals in the Working Draft. The City consulted with local waste haulers and processors, business groups, related local government agencies, recycling advocates, and other interested parties.

The stakeholder groups were supportive of most of the initiatives recommended in the Working Draft. The haulers were supportive of system operations proposals that focused on improving collection consistency citywide while not prescribing collection technology. They encouraged flexible and creative solutions to drive cost-effective operations. Haulers were willing to evaluate collection of new materials, such as plastics and food waste, but were concerned about enforcement of any bans or mandates. Business interests appreciated new recycling services for small businesses, requested more involvement in commercial contracting plans, and discouraged the City from considering any mandatory recycling requirements. Recycling advocates requested the addition of new materials to curbside and drop-off programs and encouraged bans on specific materials such as paper from garbage collection as a way to increase recycling diversion. Local government agencies were mostly enthusiastic about the many ideas for shared resources and program partnerships.

Public Review Draft

In May 1998, a Public Review Draft Plan was released, along with a Draft Environmental Impact Statement. It contained a recommended program and alternatives.

The public review process involved a series of five public meetings in Seattle's neighborhoods, and presentations to nine interested Community and District Councils. Nearly 10,000 summary pamphlets about the Plan recommendations were distributed at the meetings; at Neighborhood Service Centers, Libraries, Community Centers; to all neighborhood and community groups; and to people on mailing lists from the Business and Industry Recycling Venture and Washington Citizens for Resource Conservation. The pamphlets included a questionnaire about some of the recommendations. The Plan was also available on SPU's web page, and a hotline was established to take comments and requests for documents. SPU received over 300 questionnaire responses, more than 40 letters, and numerous comments on the hotline and at public meetings.

One of the issues raised by the Public Review Draft was potential service changes for single family residential customers, specifically changes in collection frequency for yard waste and recycling, a change in the way recyclables are collected, and changes in yard waste rates. The City is sensitive to customer opinions about changing the current system, especially as most customers are very satisfied with what they have (the exception being recycling frequency south of the Ship Canal).

In order to explore customer opinions about service level changes, the City sponsored focus group discussions and another survey of 400 registered voters in the City.[2,3]

At the City Council's request, the City contracted with an expert panel of nationally known solid waste experts who reviewed the Draft Plan and prepared a paper summarizing their comments.

Final Draft Plan

Opinions received during the public review process were thoughtful and varied. Some programmatic suggestions were incorporated into the Final Draft Plan, and others filed as ideas to consider in developing education and outreach programs. The comments reinforced the strong emphasis in the Draft Plan on waste reduction and product stewardship. In response to many comments, the Plan was revised to reflect a more assertive approach to increasing recycling diversion and participation, especially in the multi-family sector.

Responses to possible service level changes for single family residents were mixed. The survey, focus groups, and questionnaire responses suggest that the majority of residents are willing to support service changes if they can be shown to control garbage rates. The majority of north end residents were willing to accept reduced service levels in the interests of equity and keeping rates low. However, some north end residents expressed strong reservations about reduced collection frequencies and changes in recycling containers.

Service level comments will be considered in the City Council's decisions associated with the new collection contracts. The Final Draft Plan reconfirmed the goals of balancing customer service, environmental impacts, and cost-effectiveness when decisions are made.

The Final Draft Plan was submitted to the City Council in August, 1998, along with a Final Environmental Impact Statement. The Council held a public hearing and adopted the Final Plan. The Final Plan will be submitted to the Department of Ecology for approval.

Endnotes

[1] City of Seattle, *Comprehensive Solid Waste Management Plan Survey.* Elway Research, Inc., December 1995. This study had a 95% confidence level; i.e. it was very close to what results would have been if every household in Seattle had been surveyed.

[2] Seattle Public Utilities, *RFP Focus Group Summary and Analysis.* Skumatz Economic Research Associates, June 1998.

[3] Seattle Public Utilities, *The Elway Poll: Proprietary Questions.* Elway Research, Inc., June 1998. The margin of error for the Elway Poll is + or - 5%.

Government

City government continues to play a strong role, and structures rates to support the goals of sustainable materials management. These days, one of the City's main functions is to support business and community activities. City employees work with neighborhoods to facilitate materials exchange, recycling, and cleanup projects.

Because there is less waste, the City's role in ensuring collection, transfer, and disposal is growing smaller. Modern collection and transfer methods are flexible and efficient, and can respond easily to evolving technology and customer needs.

City government leads the way in using recyclable products and products made with recycled materials. In City offices, paper is used sparingly and reusable cups and other utensils are the norm. When the City upgrades, used equipment is sold or returned to the manufacturer for replacement. City grounds and parks are maintained with grasscycling and compost from nearby neighborhood or City facilities.

Policy Context

For the City of Seattle, this Solid Waste Plan is another step on the road to a sustainable future. The City has been on this road for decades, with its emphasis on conservation of electricity and water as well as material resources. In 1994 *Seattle's Comprehensive Plan: Toward a Sustainable Seattle*[1] brought the widely-shared values of healthy communities, environmental stewardship, economic opportunity, and social equity together into the over-arching concept of "sustainability."

Earlier, the City affirmed its commitment to environmental stewardship through pollution prevention, waste reduction, recycling, and conservation in the *Environmental Action Agenda,*[2] which was developed with the assistance of a policy advisory committee composed of citizens, environmental leaders, and technical experts. Of course the 1989 Solid Waste Management Plan, *On the Road to Recovery*, also established waste reduction and recycling as key goals.

Environmental Action Plan

The Growth Management Plan's core value of environmental stewardship had been well articulated in the Environmental Action Agenda, where it was defined as "our responsibility, as individuals and as a City, to manage our relationship with the Earth with proper regard to the rights of others (including other people, other species, other regions, and other generations)." City government was seen as playing an important role in building a stewardship ethic within City departments, throughout the Seattle community, and in the entire Puget Sound region. Many of the action items in the Environmental Action Agenda were aimed at pollution prevention, waste reduction, recycling and conservation.

Traditional City Responsibilities

In its 1994 *Comprehensive Growth Management Plan* and in the 1992 *Environmental Action Agenda,* Seattle strongly affirmed its commitment to some values that are relatively new roles for municipal government: environmental stewardship, economic opportunity, and social equity. In this Solid Waste Plan, Seattle Public Utilities (SPU) places these new directions firmly in the context of more traditional public health and safety and fiscal accountability responsibilities of municipal government. This Plan is based on these three values:

- **Public and environmental health.** The City's primary responsibility is to ensure public health and safety, and careful management of solid waste is an important part of this responsibility. The range of solid waste services described in this Plan are designed to contribute to environmental, economic, and community health.
- **Cost effectiveness and system efficiency.** The City has a duty to deliver affordable, efficient, and convenient solid waste services. In the long-term perspective of this Plan, this responsibility includes making sound investments and taking advantage of evolving technologies. From this perspective, it makes good economic sense to develop markets for recyclables, opportunities for reuse, and an ethic of waste reduction.
- **Customer and community needs.** The City has a responsibility to provide solid waste services that are accessible to all customers and that respond to community needs and interests. The ideas described in this Plan are based on the ideas and interests of many customers, and show ways to maximize support for neighborhood interests.

"Sustainability refers to the long-term social, economic, and environmental health of our community. A sustainable culture thrives without compromising the ability of future generations to meet their needs. . . . Sustainable cities use resources efficiently and effectively. They reuse and recycle. They use local resources where they can. They minimize exportation of environmental risk. They provide physical and economic security, and they distribute these and other benefits evenly."

-Seattle City Council[5]

Sustainability: Putting It All Together

As part of Seattle City government, SPU aims to be a good steward of the public and environmental health now and for generations to

BALANCING THE VALUES

The vision and goals described above reflect the values the City and citizens hold for solid waste management (see Chapter 3). However, achieving the vision and goals according to these public values is easier said than done. Fulfilling each of these values may not always lead in the same direction, so we need to balance these values in finding a path to a sustainable future.

The Programs for the Future described in Chapters 5 through 10 and summarized in Chapter 11 were designed to fulfill criteria associated with each of the three core values.

The planned programs rate high in response to the following questions, which are elaborated in Chapter 11:

- To what extent does this program SUStain public and environmental health?
- To what extent does this program mainTAIN cost-effectiveness and system efficiency?
- To what extent does this program enABLE Seattle's communities and support customer and community needs?

SUStain
Public and Environmental Health

mainTAIN
Cost-Effectiveness and System Efficiency

enABLE
Customer and Community Needs

Endnotes

[1] Adopted July 25, 1994 by City Council Resolution 28962.

[2] City of Seattle Planning Department. *Mayor's Recommended Environmental Action Agenda: Environmental Stewardship in Seattle.* September 1992.

[3] Karl-Henrik Robert, et. al., "A Compass for Sustainable Development," *The Natural Step News.* San Francisco, CA, Winter 1996. For more information: www.naturalstep.org.

[4] City Council Resolution 28962, adopting a vision for the Seattle Comprehensive Plan.

[5] Ibid.

Chapter 5: Waste Reduction

"Have little and gain. Have much and be confused."

— Lao Tsu

Waste reduction is the starting point for our journey on the "path to sustainability." Chapter 5 defines what we mean by waste reduction and why it's so important. It then describes what's been done so far to reduce organic, non-organic, and hazardous wastes; reviews opportunities for further achievements; and describes the City's goal and plan for the future.

What Is Waste Reduction?

Waste reduction is not the same as recycling. Waste reduction means that less garbage or recyclables are produced in the first place. It means reducing the volume and toxicity of wastes each of us makes in the course of daily life.

We can reduce waste by not making it. If we don't create waste, we don't need expensive and elaborate systems to lessen its impacts on the health of our environment, economy, and personal well-being.

> ***Ways to reduce waste:*** *Get books and tapes from the library. Rent items you use infrequently. Use a re-usable coffee mug. Give rebates to customers who bring their own shopping bags. Buy durable goods instead of disposables. Buy things with little or no packaging. Make double-sided copying office policy. Design construction projects to minimize waste.*

We can re-use the goods around us. Instead of throwing something away, think of how you, or someone you know, or a local charity, might be able to re-use it. By re-using materials in our own homes or businesses we avoid the need for collection and disposal.

QFC at Broadway and Pike: Sydney Dolder always brings her own cloth bag. She shops at this market because it has a better attitude towards re-users. She feels they're making an effort to reduce waste.

Ways to re-use: *Check out second-hand stores for construction materials and furniture. Have that winter coat altered and refurbished. Rinse plastic bags and use them again. Deliver goods in reusable crates.*

We also can come full circle in our own homes and businesses by managing organic materials[†] on-site.

Ways to manage organic materials on site: *Compost yard and food waste in your back yard if you have one. Set up a composting operation at your business or institution. Leave grass clippings on the lawn.*

"Our enormously productive economy...demands that we make consumption our way of life, that we convert the buying and use of goods into rituals, that we seek spiritual satisfaction, or ego satisfaction, in consumption....We need things consumed, burned up, worn out, replaced, and discarded at an ever increasing rate."[2]

— Victor Lebow, *The Journal of Retailing*, Spring 1955.

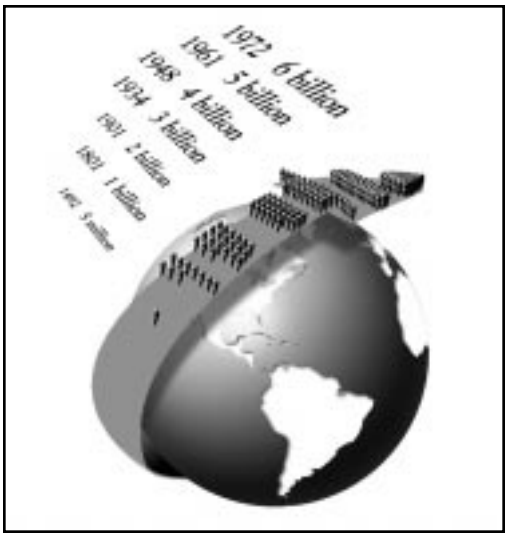
❖ ❖ ❖

Since 1940, Americans have used up as much of the Earth's mineral resources as all previous generations put together, at a current rate of 20 tons per person per year.[3]

❖ ❖ ❖

Industrialized countries comprise 20% of the world's population — yet they consume 86% of the world's aluminum, 81% of its paper, 80% of its iron, and 76% of its paper.[4]

Why Reduce Waste?



"Over-consumption by the world's fortunate is an environmental problem unmatched in severity by anything but perhaps population growth."[1] — Alan Durning

Waste reduction conserves natural resources, while recycling only defers extraction of resources and the need for disposal. Waste reduction eliminates the costs of dealing with waste. Because of this, local, state, and federal governments have made waste reduction their highest priority for managing waste. That means it is even more important to reduce waste than to recycle.

For example, grasscycling – "cut it high and let it lie" – returns organic nutrients to your lawn, right where they're needed. Grasscycling saves you time and energy bagging and dragging clippings to the curb. Grasscycling saves the whole loop of collection, transportation to a composting facility, processing, packaging, and transport back to the store where you purchase it (as commercial compost) to renew your lawn! Grasscycling greatly reduces the need for making and marketing inorganic fertilizer for the lawn.

Double-sided copying, sharing a newspaper, and borrowing books and periodicals from the library all reduce the large amount of paper

[†] Organic materials are yard wastes and food wastes. They are putrescibles – that is to say, they rot.

we waste. The less paper we buy, the fewer trees are cut down, transported to a mill, pulped and processed, transported to a wholesaler, packaged and transported to a retailer. Reducing paper use shrinks the whole loop of making and marketing paper.

What Have We Achieved Since 1989?

The first goal of Seattle's 1989 Plan, *On the Road to Recovery*, was to reduce as much as possible the volume and toxicity of waste generated in the City. Since then, City waste prevention programs have had significant results.

Our commitment in *On the Road to Recovery* was to hire a waste reduction specialist and initiate a waste reduction program. First, examining the composition of Seattle's waste stream, we defined three areas for reducing waste: organic materials, non-organic materials, and hazardous household products.[5] Then, over the past eight years, the City invested in programs designed to prevent and reduce waste.

All these programs include educational activities, and all offer tools (like compost bins, safe cleaning kits, and re-use directories) that provide tangible ways to reduce waste.

Organic Materials

Since 1990, SPU has delivered a free or largely subsidized yard waste composting bin and compost training to approximately 24% of single-family residents. In addition, the City has provided information and assistance to many more individuals through its sponsorship of compost demonstration sites, workshops, and printed materials. A compost hot line has helped up to 12,000 residents in a single year. In 1994 the program expanded to include the distribution of bins for food waste composting.

SPU, in a joint program with King County, educates residents about sustainable lawn care through a major grasscycling, water conservation, and toxics reduction campaign. Discounts have also been offered on mulch mowing machines.

Non-organic Materials

The City provides education to residential customers on where to find re-usable and repairable items (*Use it Again! Seattle* directory), how to reduce unwanted mail (*Bulk Mail Blues*), how to shop selectively (*Shop Smart*), and how to reduce waste during the holiday season. Waste reduction messages are also included in Seattle Public Utilities (SPU) school curricula, the citywide *Curb Waste Times* newsletter, and other promotional publications.

To reduce waste by businesses, SPU supports the Business and Industry Recycling Venture (BIRV), which provides information and assistance to reduce office, restaurant, and construction site waste.

The Shop Smart Program educates shoppers in selecting products with the minimum of packaging and maximum of recycled content.

Annual "Less Is More" grants have provided many opportunities for testing neighborhood and commercial waste reduction activities, ranging from community yard sales to re-usable delivery containers.

Moderate Risk Wastes

As a partner in the Local Hazardous Waste Management Program (LHWMP), Seattle encourages citizens to use fewer hazardous and toxic chemicals in their homes and gardens. This includes the Green Gardening, Green Cleaning, and Natural Lawns programs. The two Seattle Haz Sites operate a direct waste exchange for certain usable materials, especially latex paint.

Other LHWMP partners provide additional education and technical assistance programs which help businesses and other small quantity generators to reduce their use of hazardous chemicals These include waste audits and publication of a catalog of hazardous and solid wastes available for exchange (IMEX).

Results

How have we done in achieving the 1989 waste reduction goal?

- In surveys, over 90% of Seattle's citizens have consistently acknowledged the importance of waste reduction and supported the City's involvement in encouraging increased waste reduction.[6,7]
- Seattle's back yard composting program has been enormously successful; 43% of Seattle's single family households now compost at home.
- Between 1993 and 1996, an average of 1,500 people each year participated in Green Gardening Tours of gardens managed without pesticides .
- Local garden nurseries report shifts in sales from toxic to non-toxic pest control products.
- Since 1988, SPU has supplied 20,500 individuals and classrooms with Green Cleaning Kits to replace hazardous household cleansers.
- Seattle has one of the nation's highest subscription rates to the Direct Marketing Association's service to remove residents from direct mail listings.

- In 1995, City-sponsored back yard composting and grasscycling programs diverted 10,300 tons of organic materials from the curb, at a savings to ratepayers of $65/ton.
- In 1997, 350 businesses attended packaging reduction workshops.
- The Law Firm Waste Reduction Network published and distributed to all law firms in Seattle a *How to Guidebook: The Case for Waste Prevention*, primarily aimed at reducing paper waste.
- Over 50% of businesses who qualified for the Green Works[§] program re-use their packaging materials and cardboard boxes.
- The Household Hazardous Waste collection facilities (Haz Sites) provided 44 tons of useable products to individuals and organizations for use, rather than disposal.

These results indicate that Seattle residents and businesses support waste reduction, and are practicing waste reduction at home and in the workplace. Quantitative evidence of waste reduction on a larger scale is not available.

Between 1988 and 1995, average waste generation per resident and per employee has stayed about the same (see Chapter 1). In other words, we are still putting the same amount of material at the curb as we were in 1988, only now more is being collected for recycling and composting. If we were really reducing waste, generation rates would go down.

Unfortunately it is hard to make a direct connection between increases or decreases in per capita and per employee generation rates and conscious waste reduction behavior changes. Changes in waste generation have other causes which often mask small, incremental changes. These causes include:

- The state of the economy. A better economic situation means people buy more and discard more.
- Household size. Smaller households generally have higher per capita generation rates. Some wastes don't vary with household size, such as the daily paper and lawn clippings.
- Primary types of businesses in a community. Some businesses tend to produce more wastes than others. Groceries and restaurants have the highest per employee generation rates, followed by manufacturing and wholesale/retail trade. Schools and offices have relatively low rates per employee.

Central Co-op, 12th and Denny: Deborah Brinckerhoff and Brigg Noyes say, "Once a month, we buy all the bulk items we'll

[§] Green Works is a business recognition program co-sponsored by King County and the City of Seattle's Business and Industry Recycling Venture (BIRV).

What Are Current Needs and Opportunities?

Materials

Paper waste represents one of the biggest waste reduction opportunities. Paper products – especially cardboard, newspaper, and office paper – still make up 40% of the total amount of waste recycled or discarded. Because Seattleites can easily recycle their paper, it may seem less of a problem than plastic packaging, for example, but in fact we consume enormous amounts of paper. Residents discard or recycle an average of 1 lb/day, and employees discard or recycle an average of 3.3 lbs/working day. Consuming significantly less paper would make a major impact on the total waste generated.

When customers are asked about waste reduction, unwanted mail and packaging – especially plastic packaging – are frequently identified as the items they say they would most like to reduce.

Although nearly half of Seattle's residents say they are already composting either yard wastes, food waste, or both, and although more and more residents and landscapers are discovering they can simply leave grass clippings on their lawn – grasscycle – thousands of tons of organic materials are still collected at the curb. Increasing the amount of yard waste and food waste handled by residents in their gardens, and by businesses and institutions on their properties is another significant waste reduction opportunity.

Central Co-op, 12th & Denny: Dale Cox says, "I'm using this for a plant pot – I try to walk as soft as I can on the planet."

It is hard to measure in tons how much we recycle or discard that could have been reused. One study estimated that self-haul customers throw away about $1.1 million worth of re-usable items at the Recycling and Disposal stations annually.[8] People often express concern about the difficulty of finding outlets for items such as reusable building materials and electronic equipment. Although there are many sources of reusable items, it is not always easy to connect with places where they are needed.

Although quantities are small compared with paper, the use and disposal of toxic and hazardous chemicals can have negative human health and environmental impacts, and are expensive to manage. They continue to be a high waste reduction priority.

Strategies

Education and technical assistance have been important elements of Seattle's waste reduction programs up to now, and have been successful. Educational strategies include general messages, hotlines, demonstrations, and specific how-to information. Educational efforts can be designed for the general population as well as specific groups of people. Education can be enhanced with

incentives like discounts on equipment, which have been offered on compost bins and grasscycling mowers. Grants can encourage people to try particular waste reduction ideas.

Seattle Yard Sale – a Great Way to Reduce Waste

Rate incentives are another potential strategy for increasing waste reduction. For example, residents currently pay for collection of both garbage and recyclables through their garbage bills. The garbage rate varies according to the size of the garbage can, which creates an incentive for people to recycle more. A variable recycling rate (as well as a variable garbage rate), which charged residents directly for recycling based on the size of their recycling container, would create an incentive for waste reduction. This idea has not been popular at focus group discussions. It is perceived as a dis-incentive to recycling, and a clear rate structure that created incentives for recycling and waste reduction would be hard to design and communicate.

Charging for garbage by weight instead of by can size could also encourage waste reduction. It would provide more precise information on each bill about how much waste each generator produced, just as we are now given information about how much water or electricity we use. Weight-based rates require mechanisms for weighing and recording individual cans as they are collected. This technology is already available, but needs to be refined for accuracy on hilly terrain. This idea generally meets with some support, although concerns about illegal dumping of heavy items are sometimes raised.

A variable rate for yard waste at the curb – charging for the number of cans set out – instead of the current flat rate could also be designed to create a greater economic incentive for on-site management. This proposal has met with generally positive response from the public: 70% of people who answered the questionnaire distributed with the Draft Plan liked the idea because it was more fair, and because it rewarded people who compost. Focus group participants also viewed a variable yard waste rate favorably.[9]

Another potential rate alternative for yard waste is to charge a higher rate for grass than for other yard wastes such as prunings. The rationale for this is that grass can cause odor problems at composting facilities, and the less they receive, the better. However, collecting and recording at the curb would be expensive and complex.

Another potential strategy to reduce grass at the curb would be to ban it from both garbage (as it is now) and from yard waste. This would essentially mandate grasscycling or on-site composting. It could also encourage illegal dumping of grass.

Measuring Waste Reduction

SPU tracks total tonnages of garbage, yard waste, and recyclables collected at the curb and at the Recycling and Disposal stations. The State's annual recycling survey provides data on commercial recycling, and SPU tracks tons of commercial garbage on their way to the landfill. This allows us to calculate generation rates per household, or per capita, or per employee, and to observe trends in overall generation rates. The previous section describes why this measurement has limitations for measuring the success of waste reduction programs. However, it does give a broad picture of long-term changes in waste generation in our overall system. In terms of the larger goal of sustainability, this measurement is meaningful.

Sorting for Residential Waste Stream Composition Survey

SPU has also added a component to its waste stream composition studies to measure quantities of disposable, single-use, and re-usable items found in the garbage. Over time, we expect these studies to measure progress in specific waste reduction practices. This strategy is currently being tested.

WASTE REDUCTION ON THE PATH TO SUSTAINABILITY

Goal

The waste reduction goal of this plan is:

To increase waste reduction and resource conservation.

A strong commitment to waste reduction and an expansion of waste reduction efforts reflects the City's policy of environmental stewardship for future generations, and the consistent support of Seattle citizens. Waste reduction is a key conservation practice and the most cost-effective waste management strategy.

In fulfilling this goal, the City joins other organizations and individuals striving for more sustainable and less wasteful lives. This effort includes not only solid waste but energy and water conservation, transportation, agriculture, and toxics reduction. The City will work in partnership with others to create and deliver a conservation campaign designed to reach the greatest number of people.

SPU expects its waste reduction programs will result in reduced generation rates per resident and per employee and reduced quantities of disposable, single-use, and re-usable items thrown away in the garbage.

Programs for the Future

The City proposes to make waste reduction a major program priority as part of an integrated campaign to increase our efforts to conserve all resources. Seattle has been a leader in the recycling revolution, but now we have a new challenge: how to reduce the total waste we generate – that is, reduce both recycled wastes and disposed wastes.

The program expansions listed below will continue to rely primarily on education and incentives through outreach to residential and business customers.

- ***Partner with other agencies and organizations to maximize the impacts of waste reduction and conservation messages.*** SPU will seek to combine forces with other local agencies and organizations that are delivering conservation and sustainability messages with the goal of creating consistent and integrated campaigns, and of sharing and leveraging resources. A number of people have pointed out the importance of reaching children and youth, since they are the citizens of the future.
- ***Expand education, technical assistance, and grants to businesses.*** The residential sector has been the main focus of past waste reduction programs sponsored by the City. SPU aims to expand outreach to businesses about how to reduce wastes in their own practices and processes as well as how to reduce the amount of waste passed on to consumers, such as unwanted mail and excess packaging.
- ***Make paper waste reduction an outreach priority.*** In outreach efforts for both residents and businesses, SPU will focus on the benefits of reducing paper wastes. As research within SPU has shown, double-sided copying, eliminating unnecessary paper reports, and generally more effective use of electronic means for transmitting and storing information could be important elements of the program. Packaging reduction also will be important.
- ***Offer strategies to measure individual waste reduction potential.*** During the process of developing this Plan, the concept of individual responsibility – by both consumers and producers – has arisen. How can individual residents or businesses review their own waste generation practices and set goals for waste reduction? As part of its education program, SPU will assess ways to help individuals and businesses establish individual goals and practices for waste reduction. This program could be designed for a variety of key groups from large businesses to classrooms.
- ***Focus on top commercial disposers.*** City Light's Account Executives program, which offers conservation assistance to large users of electricity, is a model for a program designed for the City's largest waste generators, including general waste reduction incentives and assistance, paper waste reduction programs, and

the development of individual waste reduction goals. Hospitals have been mentioned as businesses that have to deal with an enormous amount of waste, including packaging.

- ***Expand re-use promotion and opportunities.*** Charitable businesses (such as Goodwill Industries), second hand stores, yard sales, and want ads all provide outlets for re-usable items such as clothes, books, furniture, and construction materials. The main problem seems to be knowing where to take items we want to offer for re-use and getting there with the item. People are only willing to do so much work to find a re-use outlet rather than throw something away.

  SPU will seek effective strategies for expanding re-use promotion. Several ideas have been suggested, including an expansion of the IMEX waste exchange catalog, neighborhood waste exchanges, bulletin boards about upcoming demolition activities for salvaging opportunities, and other information distribution about re-use outlets.

  In addition, SPU will provide opportunities for collecting re useables at its new Recycling Center (see Chapter 6), and at Neighborhood Clean Up drop sites.

- ***Continue to provide education and incentives for on-site organic materials management.*** SPU will continue to promote grasscycling and back yard composting of both yard and food wastes. Selection of safe and effective food waste composting bins, distribution of bins, workshops, and other educational outreach will continue. The success of discounts on mulching mowers could be expanded to other items. A number of citizens have suggested that the City help to provide chippers or shredders. One way to do this would be to offer purchase discounts to individuals or neighborhood groups. Educational efforts will also focus on professional landscapers and gardeners.

Young grasscyclers (Seattle Youth Conservation Corps), equipped with up-to-date grasscycling mowers, celebrate a completed job at Alki.

- ***Establish a variable yard waste rate.*** The City's goal for the future is to develop a variable rate for yard waste. Residents will pay based on the number of bags they set out rather than a monthly flat fee for up to a maximum number of bags. This rate will probably include a base rate (a monthly fee for a set number of bags) and an additional charge for any additional bags. The goal is to provide an incentive for back yard composting and grasscycling, and to charge people who use the service more a higher rate than those who use it less.
- ***Waste reduction rate incentives.*** Although the City will not pursue garbage by weight billing at this time, SPU will continue to monitor the technology and its potential feasibility in the future.

Endnotes

[1] Alan Durning, *State of the World Report*. Worldwatch Institute, 1991.

[2] Victor Lebow, *The Journal of Retailing*. Spring 1955, Winter 1955-6.

[3] Alan Thein Durning, *How Much is Enough? The Consumer Society and the Future of the Earth*. New York, W.W. Norton & Col, Inc., 1992, p. 23.

[4] *State of the World Report*. Worldwatch Institute, 1995.

[5] The 1996 *Residential Waste Stream Composition Survey* and the 1997 *Commercial/Self-Haul Waste Stream Composition Study* presents this data in full. Both are available on request from Seattle Public Utilities.

[6] City of Seattle, *Comprehensive Solid Waste Management Plan Survey*. Elway Research Inc., December 1995.

[7] City of Seattle, *Summary of Questionnaire Responses.* Triangle Associates, July 1998.

[8] City of Seattle, *Materials Re-use Study.* Sound Resource Management Group, February 1996.

[9] City of Seattle, *RFP Focus Group.* Skumatz Economic Research Associates, Inc., June 1998.

Chapter 6: Recycling

Matter can neither be created nor destroyed, but it can be transformed.

– First Law of Thermodynamics

Even for those of us who are most dedicated to reducing waste, it's probably impossible not to produce some waste. After waste reduction, the next best thing is to extend the useful life of materials by buying recyclable products and recycling them for some other purpose. This chapter examines what's currently recyclable in Seattle, what the City has done to divert recyclable material from the landfill, and what opportunities exist to recycle even more in the future.

What Is Recycling?

Recycling means turning used products into new. It involves *collecting* unwanted items or materials, *processing* them into materials suitable for re-use, *making* new products from the recycled materials, and then *using* the new products. It diverts materials from landfills to new uses.

To say a material is recyclable is to say it can complete this entire process. Some materials, like paper and yard waste, are *currently* recyclable; facilities exist for every step of the recycling process. Others, like food wastes and many plastics, are *potentially* recyclable; some portion of the recycling process is not yet in place.

Separation and Collection of Recyclables

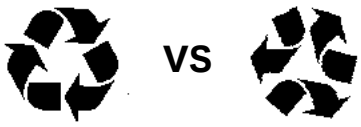
Re-manufacture with Recycled Feedstocks

Purchase of New Recycled-Content Products

Why Recycle?

Recycling conserves resources by keeping them in circulation, reducing the depletion of non-renewable resources such as fossil fuels and mineral ores used to manufacture products from virgin materials. Composting organic materials, like yard waste and food waste, recycles them to the soil, imitating natural processes of decay and regeneration.

Recycling is not a panacea, and even recycling has an environmental



Recycling versus Dead End

Why Re-manufacturing?

Re-manufacturing generally uses less energy and water and causes less pollution than manufacturing from virgin feedstocks.

- Manufacturing an aluminum can from recycled cans instead of mining and processing bauxite reduces manufacturer-generated air pollution by 95%.[1]
- Throwing away an aluminum can wastes as much energy as if the can were half full of gasoline.[2]
- Recycling one ton of iron or steel eliminates the need to mine 1.5 tons of ore and 700 pounds of coal.[3]

impact. Collection, sorting, transportation, and re-manufacture of recyclables all use non-renewable resources that can contribute to pollution. Recycling is not an infinite loop. There is always some loss, some waste, as the material goes around and around 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.

Recycling can also save money if there are markets for the materials that are collected. Seattle's curbside recycling program has saved millions of dollars for ratepayers over the past nine years.

What Is Recyclable?

Is it recyclable? It's not such an easy question to answer. In several states, attorney generals have been asked for their rulings. To say a material is recyclable has generally come to mean that collection options are available in a community, and that the collected material is reprocessed.

More broadly, recyclability means the technology exists – at least in the research lab – to recycle a particular material. However, this technology may not yet be available in the market. Disposable diapers and some plastics fit this category.

Whether or not a given material is collected has both technical and economic aspects. Recycling a particular material is problematic if collection costs are very high; if processing plants are far away and transportation costs are prohibitive; if very few re-manufacturers can *use* the recycled material; if consumers do not *buy* the recycled-content product. For large-quantity materials like newspaper and yard waste, a commitment by large cities to collect can create a market driven by a guaranteed supply.

Recyclability varies from region to region, depending on the availability of markets. Here in Seattle we benefit from our position as a port on the Pacific Rim. West coast and Asian markets compete to purchase some of our recyclable materials. We are also fortunate to have a local market for glass, and regional markets for paper.

Recyclability is an ever-evolving concept. At present we think mostly of recyclable *materials* – goods made of one material, like glass or newspapers – that can be recycled back into new products made of that one material. These materials can be sold as commodities just like wheat and pork bellies. As new technologies and markets emerge (see *Market Development* in Chapter 8), new materials will become recyclable, and the demand for currently recycled materials will grow. What's not feasible to recycle now may become recyclable a few years down the road.

At present, many items – from containers to durable goods – are made of several materials, which can't be taken apart, sorted into different materials, and recycled. In the future, such products will be

manufactured so when their useful life ends, they can be disassembled into component parts that can be re-used or recycled in the re-manufacture of new products. Some manufacturers of cars, computers, and even the buildings we live and work in are already "designing for the environment" and starting to create new items that can be de-manufactured into component parts later. An example of this process is computer manufacturers who design new computers, and take back old ones, so their housings can be packed with the newest circuit boards, and precious metals reclaimed from circuit boards and monitors. (See *Product Stewardship* in Chapter 8.)

What Is Currently Recyclable?

Materials currently recyclable in Seattle are listed below to illustrate how complicated it is to say that something is recyclable. A material that is recyclable if a nice, clean, ten-ton load of it is dropped off at the plant may not be economically recyclable for a residential curbside program which collects a mixed batch of the material.

Residential Curbside Collection

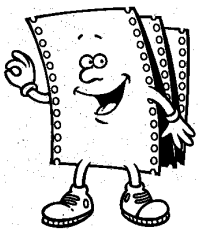
The City contracts with private companies to collect:

- Newspaper
- Cardboard
- Mixed paper
- Tin cans
- Aluminum cans
- Glass bottles and jars
- #1 and #2 plastic bottles
- Other ferrous metals (containing iron)
- Yard waste

Business Collection

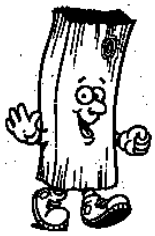
Almost any business can contract for collection of the most common recyclables:

- Newspaper
- Cardboard
- High grade office and computer paper
- Mixed office paper
- Aluminum and tin cans
- Glass bottles and jars
- #1 and #2 plastic bottles



Depending on quantity and degree of contamination, businesses can also contract for collection of a variety of other materials, including:

- Polystyrene
- Plastic film
- Pre-consumer vegetative food waste
- Construction materials such as wood, metals, and gypsum



Recycling and Disposal Stations

Residential and commercial self-haul customers can drop the following materials at City Recycling and Disposal stations:

- Newspaper
- Cardboard
- Mixed paper
- Tin cans
- Aluminum cans
- Glass bottles and jars
- #1 and #2 plastic bottles
- Ferrous metals (containing iron) including appliances
- Clean wood
- Used motor oil and oil filters
- Vehicle batteries
- Yard waste (Clean Green)

Private Recycling Drop-off Stations

Private recycling businesses accept materials that are dropped off, depending on quantity and quality. The Business and Industry Recycling Venture (BIRV) has a database list of over 300 recyclable and re-usable materials, including all those mentioned above, those listed below, and more:

- Textiles
- Carpeting
- Asphalt roofing
- Concrete and brick
- Precious and semi-precious metals
- Old film
- Computer disks
- Various plastics
- Poly coated paper
- Printer and toner cartridges
- Fluorescent light bulbs

WHAT HAVE WE ACHIEVED SINCE 1989?

The second goal of Seattle's 1989 Plan, *On the Road to Recovery* was to reduce, recycle, or compost 60% of the total waste by 1998.[†] Interim goals were to recycle 40% by 1991 and 50% by 1993. The recycling activities that are part of our current system, as described in *On the Road to Recovery*, include recycling and yard waste collection programs, a strong outreach and education program, and rate incentives. These programs are summarized below.

[†] For practical purposes, this goal has been generalized to 60% recycling since waste reduction was only intended to account for 2% of the total.

Collection

The City offers recycling and yard waste collection for all single family and multi-family residences. Recycling is voluntary; single family residents and multi-family housing owners may choose whether to sign up for recycling and yard waste collection. Seattle residents are prohibited from putting yard wastes in their garbage cans. In 1989, ferrous metals and #1 and #2 plastic bottles were added to the residential collection program. Businesses and residents can drop off some recyclables at the City's two Recycling and Disposal stations.

Private companies provide recycling collection to businesses, as well as recycling drop-off locations and community buy-back services. Since 1989, opportunities to recycle construction and demolition materials have expanded rapidly.

Outreach and Education

Seattle Public Utilities' (SPU) on-going education, outreach, and technical assistance programs are described in more detail in Chapter 10. They range from the twice-yearly *Curb Waste Times*, to a cadre of Friends of Recycling volunteers, to technical assistance for businesses by the Business and Industry Recycling Venture (BIRV).

Rate Incentives

Seattle's variable rate structure for residential garbage containers has been an important incentive for recycling. Residents pay for garbage collection based on can size. The more they recycle, the smaller the garbage can they need. Recycling collection costs are included in garbage bills. The same idea applies to multi-family garbage dumpsters.

Businesses also pay less for recycling collection than garbage collection. In some cases businesses with large amounts of higher value material, like white paper or cardboard, may receive payment for their recyclables.

The difference between commercial garbage and recycling pick-up rates is enhanced by the City's Business and Occupation (B&O) tax which is imposed on haulers for each ton of garbage collected, but not on tons of recyclables collected.

Results

How have we done in achieving the recycling goals set in 1989? Recycling has become a way of life in Seattle. In 1995 Seattle recycled 44% of its total waste. Single family residents recycled 60% of their wastes, multi-family residents and self-haulers recycled 18%, and businesses recycled 48%.

During the 1996 playoffs, KUOW's Bill Radke joked that when Yankee fans threw their bottles and cans onto the field, Mariners players quickly gathered them up for recycling.

Program successes include:

- Residential rate payers saved $12 million dollars between 1988 and 1994 because it was cheaper to recycle than to landfill.
- Surveys have shown that 94% of Seattleites are generally satisfied with the system we have in place, and more than 80% would like to recycle more.
- Both businesses and residents are enthusiastic participants in recycling activities. Over 90% of single family residents are signed up for recycling services, 56% of multi-family units currently have recycling available, and 84% of all businesses say they recycle at least one material.[4]
- Eight years ago, recycling at a construction site was almost unheard of. Now there are ads for construction recycling in the Yellow Pages.
- The two City Recycling and Disposal stations have established a drop box recycling program, including metals and wood, which diverts about 5,000 tons a year, and a convenient Clean Green drop-off program for yard waste.

Despite our success, some programs proposed in 1989 are not in place as anticipated:

- A commercial high-grading program, where special trucks collected garbage high in paper content and sorted out the paper later, proved inefficient.
- A proposed sorting operation at the South Recycling and Disposal Station was found to be impractical, and alternative operations were studied. Meanwhile, the drop box program offers only minimal opportunities for recycling
- The curbside collection service for multi-family residences took longer to get going than anticipated, and is still growing to its projected level.

What Are Current Needs and Opportunities?

Materials

Table 1.2 shows there are over 150,000 tons of recyclables still going into the garbage. Over half of this is paper, including newspaper, mixed paper, and cardboard. Some of this may be contaminated with food or other wastes, but most can be recycled through Seattle's residential curbside program, and through readily available commercial recycling collection programs. Of all the mixed paper that is generated, only 57% is recycled. One reason for this – at least in the commercial sector – has been the relative weakness of mixed

Materials	Single family	Multi-family	Commercial	Self-haul	TOTAL
Food waste and compostable paper	29,812	15,195	56,458	1,643	103,108
Other plastic bottles	365	178	115	17	675
Plastic film	4,341	2,512	11,976	681	19,510
Polycoated paper	1,079	576	1,108	20	2,783
Textiles	1,767	1,207	2,989	1,729	7,692
Asphaltic roofing			858	4,337	5,195
Gypsum	646	864	3,222	4,101	8,833
TOTAL	**38,010**	**20,532**	**76,726**	**12,528**	**147,796**

Table 6.1 Tons of "Recyclables on the Verge" in the Garbage, 1995

waste paper markets, and the preference of collection companies for collecting more valuable, high grade paper wastes. However, recycling mixed paper is still cheaper than disposal as garbage, and this material offers a significant opportunity for increasing Seattle's recycling rate, along with smaller quantities of other paper products, including cardboard from businesses.

Table 6.1 lists other materials that are currently recyclable or on the verge of becoming recyclable. For these "recyclables on the verge," the infrastructure for processing or re-manufacturing is not currently available, or the costs are prohibitive.

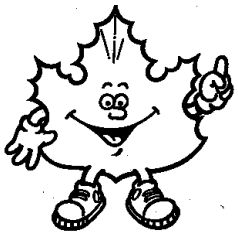
The 100,000 tons of food waste and compostable paper going into the garbage represent the greatest opportunity to increase recycling. Food scraps can be composted and recycled as a soil amendment like yard waste. At present small amounts of pre-consumer vegetative food scraps are collected from some grocery stores and restaurants for composting with yard wastes, but no local facility exists that can handle all kinds of mixed food scraps. The technical feasibility of food waste composting has been well tested, and food wastes are regularly composted in Europe and parts of Canada. Seattle and King County undertook a major study of food waste composting to identify locally appropriate techniques and conditions for aerobic processing of food scraps.[5] Anaerobic processes are also available. Studies have also assessed residential and commercial customer attitudes to collection of separated food wastes, and evaluated expected participation and diversion levels.[5,6]

An alternative to collection of all kinds of food scraps would be to collect vegetative food scraps only. If yard waste composting facilities were able to accept this material, it could be added to residential yard waste collection. Vegetative food scraps make up about 62% of all food waste currently put out in the garbage by residents.

In addition to garbage disposal of food scraps, businesses and residents send an estimated 30,000 - 35,000 tons of food waste to the sewer system via in-sink garbage disposal units.[7] Seattle continues to work with King County (Water and Land Resources Division, formerly Metro) to compare the costs and benefits of food disposal into the sewer, in the garbage, and separated for composting.[8]

Who would participate in food waste collection?

- 54% of single family residents would be "very likely" to participate.
- 78% of food processors, 60% of wholesale/retail food stores, and 61% of restaurants would participate if it cost less than garbage disposal.[9]



Collection and processing cost information was analyzed as part of the overall research into the feasibility of food waste composting. While the collection of food scraps from large businesses appears to be cost effective, the costs of residential collection are higher. However, these cost estimates are based on models and not on actual commercial activity.

Other recyclables present in smaller, but still significant, quantities in the garbage include over 10,000 tons of clean wood waste and over 12,000 tons of plastic film in commercial garbage. Recycling is currently available for both these materials. There are also nearly 7,000 tons of plastic film (such as plastic bags and plastic wrap) in residential waste, but this material is too dirty and too diverse to be acceptable in any current market.

In the self-haul garbage brought to Seattle's Recycling and Disposal stations there are over 20,000 tons of recyclable construction wastes, including clean wood waste, asphaltic roofing, gypsum, and metals. At present there is no space to separate these materials for recycling at the stations.

The other materials listed in Table 6.1 – other plastic bottles, textiles, and polycoated paper such as milk cartons and frozen food containers – are only present in very small quantities. They are included because they may have reasonable markets, and because many residents – 85% of those surveyed – say they would like to recycle more materials, especially plastics.

About 90% of yard waste is already recycled. The goal with yard waste is to shift more from the curb to the back yard (see Chapter 5). Another need is for increased and more diverse capacity for yard waste processing, which is discussed in the next chapter. Otherwise, this successful program needs to be maintained.

In addition to these recyclables in the MSW, there are nearly 120,000 tons of construction and demolition (C&D) waste discarded at private facilities, of which nearly half is recyclable.

Strategies

Single Family Residents

The single family residential sector currently has the highest recycling rate – 60%. This sector also has 100% availability of recycling and yard waste collection service, a strong rate incentive, and has been the primary focus of the City's educational outreach since 1988. However, there are still over 26,000 tons of currently recyclable materials, and another 30,000 more tons of potentially recyclable materials going to the landfill from single family residents.

When the curbside program was started, single family residents were asked to take active steps (filling out a card and mailing it in) to sign up for recycling and receive containers. An alternative strategy is to deliver containers to all single family households to create an incentive for 100% participation right from the start.

Nearly 30% of single family garbage is food waste and compostable paper. Back yard composting (see Chapter 5) may not be the preferred choice for all residents. Seattle's 1994 pilot project shows that over 50% of single family residents would be likely to participate in separate collection of food waste for centralized composting.

Other strategies to increase single family recycling diversion include more education, especially about cardboard and mixed paper (currently 15% of single family garbage), and bans that require separation of some or all recyclables from the garbage.

Numerous residents south of the Ship Canal identified a specific need for more than monthly collection of recyclables.

Multi-family Residents

Multi-family residents recycle only 18% of their wastes. This is partly because they have less to recycle (multi-family residents generate no yard wastes), partly because only 56% of multi-family residential units have recycling services at their buildings (as of September 1997), and partly because individual tenants do not have a direct rate incentive to recycle. Although City-sponsored recycling collection is available to all multi-family dwellings, not all building owners have signed up for service. Building owners save on the garbage bill if they provide recycling, but tenants only benefit if savings are passed on through their rent. Similarly, multi-family residents do not have an economic incentive to keep their recycling containers free of garbage, and contamination of recyclables has been a significant problem in some cases. Multi-family Friends of Recycling – volunteers in a building who provide information and assistance to other residents about how to recycle properly – have helped reduce this problem.

Over 26,000 tons of currently recyclable materials still go to the landfill from multi-family residents. Many multi-family residents who would like to recycle do not have services at their building, and many feel underserved. The way the current contracts are set up, all buildings with five units or more are classified as multi-tenant – receiving dumpster recycling, and all buildings with four units or less are classified as single tenant – receiving curbside container recycling. In some cases, this rigid definition creates an artificial barrier. A more flexible system which provided the recycling technology best suited to the circumstances of the building could create more recycling opportunities for some multi-family households.

Why are Seattleites so concerned about plastics?

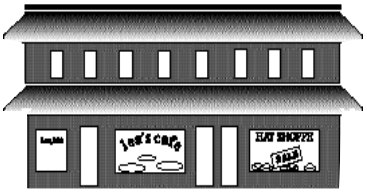
- Plastics make up 8% of our waste stream by weight and 25% by volume.
- Five of the top six chemicals ranked by the EPA as generating the most total hazardous waste are used to manufacture plastics: propylene, phenol, ethylene, polystyrene, and benzene.
- In the United States, one billion barrels of petroleum are used to manufacture plastics every year. American consumers use and discard 2.5 million plastic bottles every hour. About 200 million pounds of plastic are used in disposable diapers every year.
- Plastic discarded at sea kills an estimated 100,000 marine mammals and one million sea birds every year.[11]

Strategies to increase multi-family recycling include increased education to building owners about the economic benefits of providing recycling services, and to residents about how to separate materials. Other incentives for residents such as in-unit containers that would make separation and carrying to the dumpster more convenient could also be effective. A pilot program is currently underway to test this incentive.

Increased rate incentives could also be offered to building owners to encourage them to obtain service, although current incentives are quite strong. Alternatively, multi-family building owners could be required to sign up for recycling, unless they can demonstrate that they lack sufficient space for recycling containers, which is true of approximately 15% - 20% of buildings.

As with single family residents, more education – especially about mixed paper and cardboard – could be offered or bans that require separation of some or all recyclables from the garbage could be imposed.

Commercial Businesses

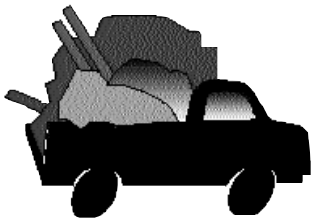


Businesses recycle nearly half the wastes they produce. Private collection services are available to all, and rates for recycling collection are lower than for garbage collection. Many businesses can reduce garbage container sizes, add recycling collection, and end up with a lower total cost. For smaller businesses already subscribing to a single garbage can, this may not be the case, although some do recycle even if it costs them slightly more to do so. SPU has provided education to businesses through the Business and Industry Recycling Venture (BIRV). The interest of customers who ask whether the businesses they patronize recycle has been an incentive for commercial recycling.

Strategies to increase commercial recycling include more outreach to encourage recycling, especially focussing on increasing recovery rates for mixed paper, plastic film, and clean wood. Commercial recycling could also be stimulated through rate incentives (if City contracts for garbage collection are successfully negotiated); and/or requiring businesses to sign up for recycling service, to recycle a certain percentage of their wastes, or to separate some or all recyclables from the garbage.

Although by State law the City cannot provide exclusive service for commercial recycling collection, as it can for residential collection and commercial garbage, it can choose to provide additional collection services. This could be a safety net service for all business accounts, collecting materials less valuable to private contractors; or a safety net service for small businesses, such as offering an opportunity to participate in residential curbside recycling.

Self-haul Customers



Most recyclable material brought to the Recycling and Disposal stations by self-haulers is construction debris. Generators are primarily small contractors and do-it-yourself homeowners. The quantities of material they dispose of are too small to make it worthwhile for them to drive to several different facilities around the County to recycle.

The current set up at the Recycling and Disposal stations also acts as a disincentive to recycle traditional materials, even though containers for separation are provided. Although recycling is free, customers who come in with mixed loads of garbage and recycling must pay or go over the scale twice.

A major way to increase self-haul recycling would be to offer more opportunities for separation of construction and demolition debris, associated with a strong rate incentive for customers to separate.

Other strategies to increase self-haul recycling include increased education and outreach, and separation requirements for some or all recyclables.

A variety of wastes are intermingled at this typical demolition site in downtown Seattle.

Construction and Demolition Debris

While more and more building contractors are separating construction materials on the job site for recycling at specialized facilities, nearly 200,000 tons of C&D debris are thrown out in residential or commercial garbage, in self-haul garbage at City Recycling and Disposal stations, or at private transfer stations. Much of this is recyclable, but it may not be efficient for generators to deliver separated recyclables to a number of separate recycling facilities.

When asked for suggestions to increase recycling in construction activities, 70% of contractors suggested a centralized facility that accepts a variety of materials, and financial incentives. Many also suggested more information about available recycling facilities and services, and education about how to save money by setting up job site recycling.

There is a need for continued education about C&D recycling opportunities, and for a one stop drop location for multiple materials.

Recycling in Public Places

Recyclable bottles and cans make up 24% of litter can wastes; newspaper 16%. Although this is only a few tons (674 in 1996), the lack of recycling in public places like parks and sidewalks is inconsistent with Seattle's image as a recycling city.

Recycling on the Path to Sustainability

Goal

The recycling goal of this plan is:

To recycle 60% of all waste generated in Seattle by 2008.

In 1989 Seattle set a goal of recycling 60% of all waste by 1998. This was an ambitious goal which provided the impetus for one of the most successful recycling programs in the world. We have not achieved this goal by 1998, because some of the programs envisioned in 1989 proved too expensive or unworkable, and in some cases diversion was not as high as projected. However, 60% recycling is still achievable. In fact, if all sectors recycled all the materials in Tables 1.2 and 6.1, Seattle's recycling rate would be more than 80%!

To recycle 60% of all waste by 2008 is still an ambitious goal. In striving for this level of diversion, it also will be important to balance the values of cost-effectiveness and customer service, and to ensure that recycling programs do not reduce incentives for waste reduction.

The overall goal of 60% is made up of different goals for different sectors. This Plan projects that single family residents will be able to recycle 70%, multi-family residents 37%, businesses 63%, and self-haul customers 39% if the programs described below are implemented.

Janet Wong, member of "Women on the Verge," Seattle's own ultimate frisbee world champions, 1997, says: "I wish I could recycle more plastics, especially yogurt containers."

Programs for the Future

The City plans to provide new opportunities for recycling, to increase participation in existing programs, and to strenuously advocate maximum diversion of recyclable materials in all sectors. The program for the future relies primarily on services, education, and incentives, with the possibility of mandates if necessary to achieve recycling goals.

- ***Continue recycling and yard waste collection programs and rate incentives for residents.*** The City will continue to offer recycling and yard waste collection for all residents, and will continue to provide rate incentives that encourage residents to reduce the amount of garbage they throw out.
- ***Distribute recycling containers to all single family residents.*** When the new collection contracts start in 2000, there are very likely to be changes in the current collection system (see Chapter 7). If these changes include new containers, they will be delivered to all eligible households, and people will no longer need to sign up for recycling.

- ***Provide recycling collection at least every other week for all single family residents.*** Monthly collection, as currently offered south of the Ship Canal, appears to limit maximum recycling. (Collection frequency is discussed further in Chapter 7.)
- ***Add new materials to residential curbside collection.*** The City intends to make curbside recycling available for all the materials for which reasonable markets exist, and which can be collected at reasonable cost. This particularly includes additional plastics, which many residents are anxious to recycle.

  The requests for proposal for the new collection contracts will include requests for the collection of additional materials.
- ***Eliminate the rigid distinction between single family and multi-family in recycling collection.*** When the new contracts start in 2000, the same contractor will collect all materials from both single and multi-family residents in a given territory. Contractors will work with building owners to determine the most suitable recycling technology.
- ***Implement a vigorous campaign to encourage multi-family building owners to sign up for recycling, and mandate sign-up if goals are not met.*** Over half the multi-family residential garbage is recyclable. If building owners were to take advantage of the City's free recycling collection and reduce their garbage dumpster size, they would save on the garbage bill. This economic incentive will be strongly promoted to building owners and managers, along with information and assistance about how to help residents recycle.

  If the objective of 80% sign-up is not achieved by 2000, then multi-family buildings will be required to provide recycling, unless they can demonstrate lack of sufficient space. In the long run, the City also proposes to create a two-tiered rate so multi-family buildings that provide recycling collection pay less for garbage.
- ***Provide in-unit recycling containers or other incentives to multi-family tenants.*** Depending on the results of the current pilot program, the City will distribute in-unit containers to residents to help them sort and manage recyclables. If in-unit containers are not helpful, other incentives will be explored and offered.
- ***Evaluate the benefits of requiring space for garbage and recycling containers in new commercial and multi-family construction and remodeling.*** Requiring space for garbage and recycling containers in new multi-family and commercial construction and remodeling would ensure that the space barrier is not an issue in the future. Before moving ahead to develop such a requirement, SPU will work with affected constituencies and Department of Construction and Land Use (DCLU) to evaluate the potential costs and benefits, especially costs and benefits associated with affordable housing

Seattleites are enthusiastic about recycling plastics: #1 and #2 plastics dumpster, North Recycling and Disposal Station.

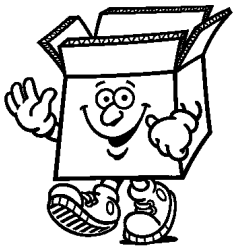
Tim Murphy dives into dumpsters three times a day to pull contaminants from the recycling at South Recycling and Disposal Station.

development. If benefits appear to outweigh the costs, SPU will work with DCLU to develop the requirement.

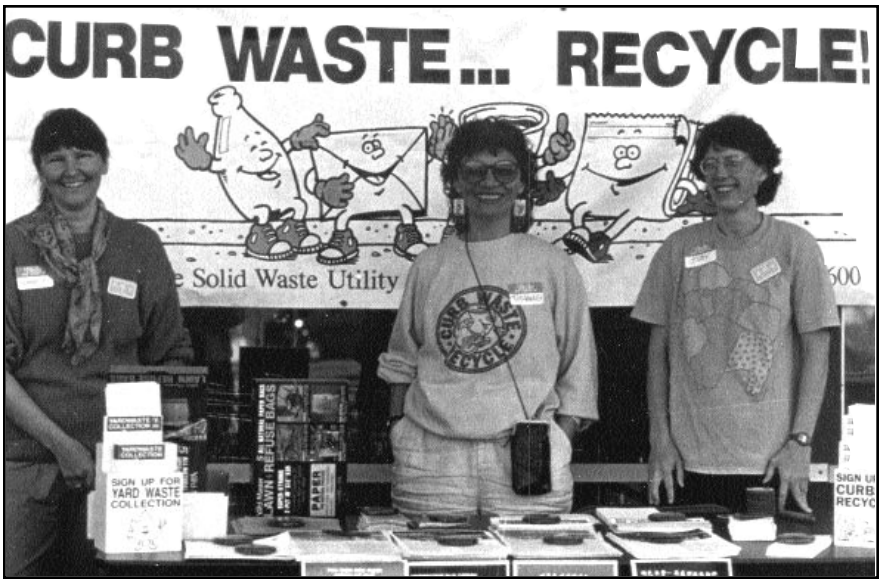
- ***Add voluntary food waste collection for single family residents.*** Contractors who bid on the new request for proposal for collection services will be asked to submit costs for the weekly collection of residential food scraps. Implementation of this option will depend on an overall evaluation of costs and benefits, including results of the marginal cost analysis comparing food waste disposal in the sewer, in the garbage, and separated for composting.

  Participation by residents will be voluntary. The program will ensure that containers, trucks, and facilities are designed to minimize pest and odor problems.

- ***Encourage the development of food waste processing facilities in the region, and promote commercial food waste separation.*** It has been pointed out that commercial food waste is the "low hanging fruit" in terms of tons available and cost-effectiveness of collection, and that the City's primary focus regarding food scraps should be towards supporting commercial food waste collection and processing. As the City cannot provide exclusive service for collection, we will not collect commercial food waste and compete with private sector collectors. The City is also choosing not to develop and operate its own food waste processing facility.



  The new requests for proposal for residential solid waste services will include food waste collection and processing. This proposal will include the offer of technical assistance incentives for facility development. It is expected that the development of a facility for residential food wastes will also provide new capacity for commercial food waste processing. If a facility is developed, the City will strongly promote commercial food waste separation as a key strategy for achieving the 63% commercial sector recycling goal.

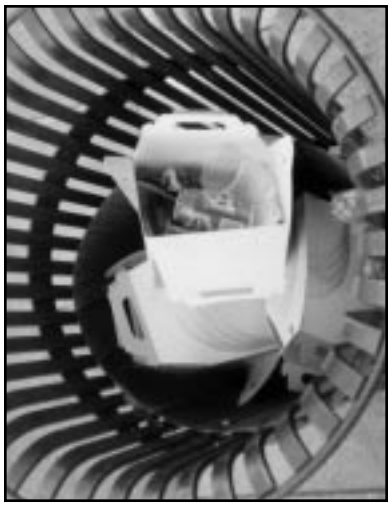


- ***Provide recycling collection to small businesses.*** The City will include recycling collection from small business generators in its new residential curbside recycling program. A strong rate incentive will be offered. Eligible businesses will be able to choose between the City service and private sector services.
- ***Consider commercial garbage rate incentives to encourage recycling.*** If the City is successful in obtaining contracts for commercial garbage collection, the City Council will set collection rates. As with residential rates, these can be structured to create greater economic incentives for reducing the amount of garbage disposed – thus encouraging waste reduction and recycling. This intention will be balanced with the City's original goal of reducing garbage collection costs for businesses.
- ***Implement major education campaigns to maximize recycling.*** The City sponsored a cardboard recycling campaign in 1993 and 1994, targeting primarily commercial generators. Waste stream composition data show that commercial cardboard disposed dropped from 20,000 tons to 15,000 tons between 1992 and 1996. This suggests that promotion can be an effective strategy.

  The City will develop two key campaigns designed to maximize recycling. One will be for residents, focusing on cardboard and mixed paper. The other will be for commercial businesses, focussing on mixed paper, plastic film, and clean wood waste.

  The commercial campaign will also use the "account executive" approach, and offer information and technical assistance to the top commercial waste generators.
- ***Propose mandates or bans if sector goals are not being achieved.*** If the programs for the future are implemented, and if residents and businesses participate, 60% recycling can be achieved by 2008. SPU calculates recycling rates on a regular basis. If, after programs are fully implemented, it appears we are falling behind in a particular sector, mandates (such as sign-up requirements) or bans on certain materials in the garbage may be proposed.
- ***Build a Recycling Center at the South Recycling and Disposal Station, and consider acquiring property near the North Station for expanded recycling.*** The City will develop a Recycling Center at the South Recycling and Disposal Station for materials currently collected as well as recyclable construction and demolition debris. The new development will allow customers to enter before they go over the scale, so they can take advantage of rate incentives. Being away from the tipping floor will also make separation of recyclables more convenient.

  Although there is no space at the North Recycling and Disposal Station, some modifications to the current container setup may enable recycling of more construction debris. The City will also explore the possibility of acquiring property near the North Station for the development of a Recycling Center.



Litter Can, Second Avenue at Seneca.

- ***Provide rate incentives to customers who use the South Recycling and Disposal Station.*** Achieving the full benefits of a Recycling Center at the South Station depends on diverting some customers who currently use the North Station. Key issues in diverting customers from north to south are travel time and disposal costs. The City proposes to offer rate incentives to customers who use the new Recycling Center, such as low recycling rates and/or a garbage discount.

  SPU will also provide more information to customers, especially small contractors, about travel and waiting times associated with the two stations, and about the new recycling and cost saving opportunities.
- ***Provide more opportunities for recycling at Home Clean-up drop sites.*** The City has already started to include more recycling opportunities at the drop sites provided for the annual Home Clean-up in some areas of the City. This effort will be continued and expanded to include new materials that may not be appropriate for curbside collection, such as construction debris and textiles.
- ***Provide recycling containers in public places.*** The City will provide recycling containers in City parks and business districts.

Endnotes

[1] *Recycler's Handbook*, Earthworks Press.

[2] Worldwatch Institute.

[3] Coal Board.

[4] *Seattle Business Recycling Survey.* Northwest Research Group, July/August 1997.

[5] King County Solid Waste and Seattle Solid Waste Utility, *Food Waste Collection and Composting Demonstration Project*. E & A Environmental, Cascadia, Inc., Sound Resource Management Group, et al., 1992-94.

[6] City of Seattle Solid Waste Utility, *Residential Food Waste Curbside Weighing Study*. 1994

[7] *Food Waste Discharge to the Wastewater Collection System*. E & A Environmental, March 1995.

[8] *Food Waste Diversion Marginal Cost Analysis Study*. Gibson Economics, in draft 1998, for Seattle and King County

[9] Same as Note 5.

[10] *Construction, Demolition and Landclearing Debris Waste Composition Study.* Cunningham Environmental, et al, September 1997.

[11] Environmental Defense Fund, "Environmental Facts," earthday@cdp.ed.general, 1993.

Chapter 7: Integrating the System

"Dirt is only matter out of place."

– John Chipman Gray

This chapter is about Seattle's system for collecting, transferring, processing, and disposing of all the "stuff" Seattle residents and businesses set out for collection – recyclables, compostables, and garbage. It also touches on the system for handling moderate risk wastes and special categories of waste.

WHAT IS THE SYSTEM?

In a nutshell, the system refers to the journey of an item that is no longer wanted from our homes or places of work to the place where it is remade into a new item, or to its final resting place in a far away landfill.

Unwanted items include all the garbage, recyclables, and yard waste that are set out for *collection* by a private company. Once collected, the material is taken to a City or private *transfer point* where it's prepared for the next stage of the journey. From the transfer point several things can happen depending on whether the material is garbage, recyclables, construction and demolition (C&D) debris, special or moderate risk waste. Recyclables and yard waste travel from transfer points to private *processing* facilities to be re-manufactured into new products. Compacted garbage is short-hauled by truck to a rail transfer facility where it's loaded onto a train and rail-hauled to a privately owned and operated landfill for *disposal*. Moderate risk waste is packed and shipped to special facilities that handle hazardous chemicals for reprocessing (motor oil and paint) or disposal.

Unwanted items include garbage, recyclables, and yard waste that residents and businesses haul directly to a City Recycling and Disposal station, C&D wastes that businesses haul to private transfer stations, and recyclables that are taken directly to private sorting or processing facilities.

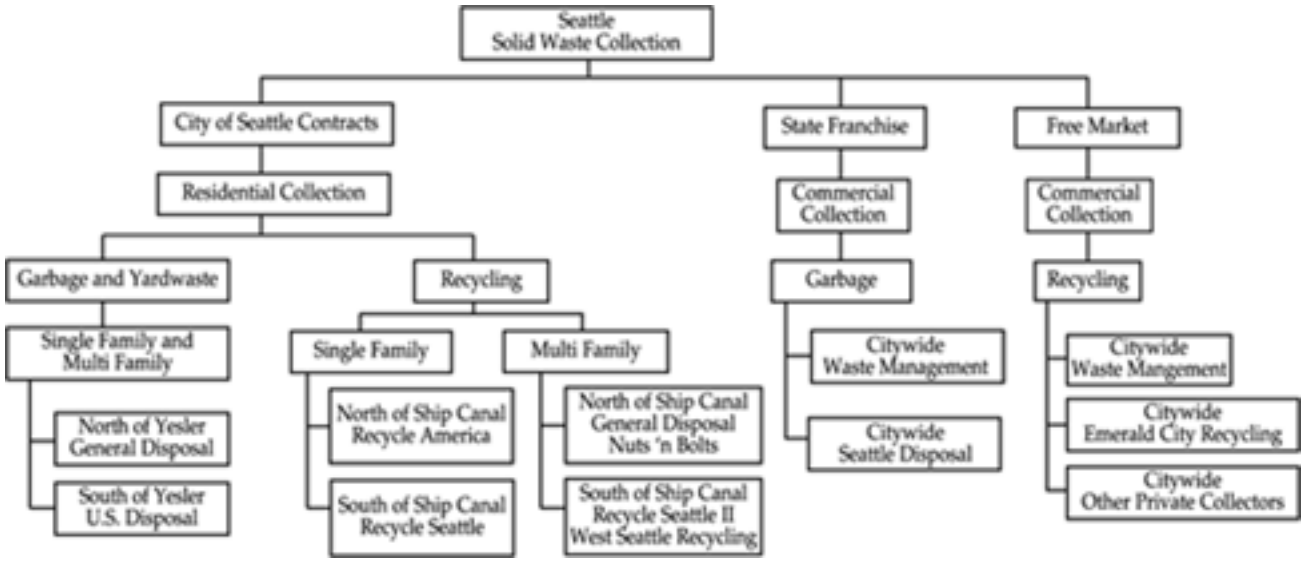
WHAT HAVE WE ACHIEVED SINCE 1989?

The City's goals for the system in the 1989 Plan, *On the Road to Recovery,* were:

- To dispose of nonrecyclable waste in an environmentally safe landfill.
- To complete closure of the Midway and Kent Highlands landfills in an environmentally safe manner.
- To increase the cost-effectiveness and efficiency of Solid Waste Utility[†] operations.

A major change in Seattle's system for collecting, transferring, and processing discarded materials occurred in 1988-1989. Single family curbside recycling started in 1988, residential yard waste collection in 1989. In 1989, residential garbage pick up shifted from back yards to curbs and alleys, and new containers and rates were introduced. In 1990, Seattle began shipping all unrecycled solid waste to the Columbia Ridge landfill in Arlington, Oregon. In 1992, the City first offered multi-family recycling, and expanded to a citywide program in 1994. In 1996, the City initiated negotiations for commercial garbage collection contracts. This section reviews the current system as it has evolved since 1989.

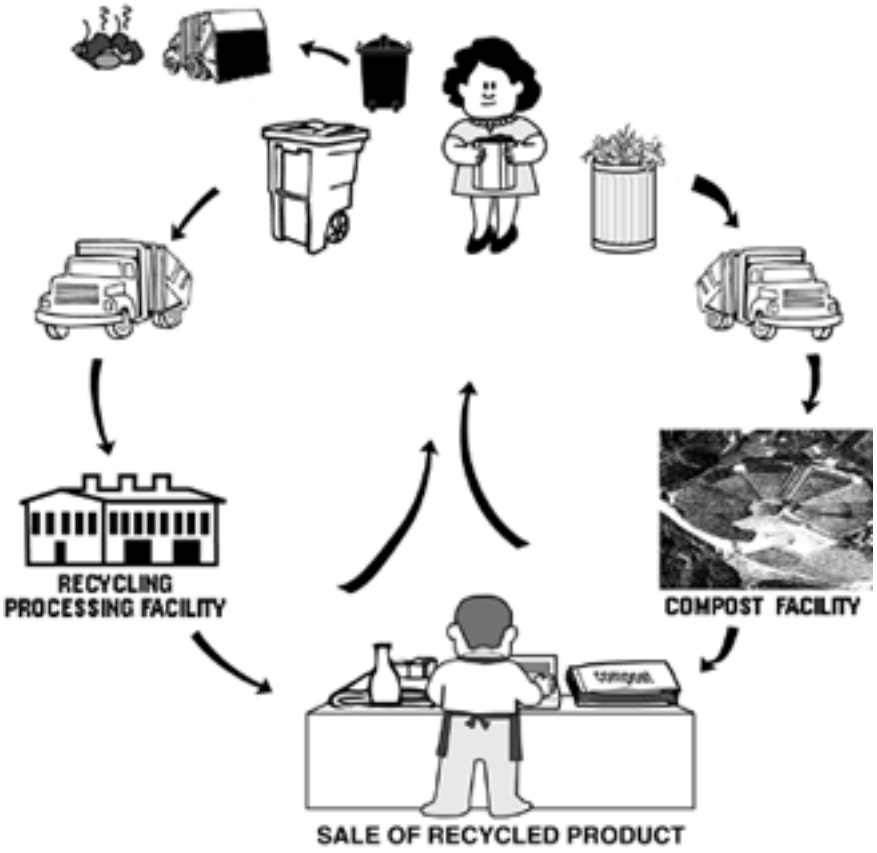
Figure 7.1 Seattle's Solid Waste Collection System[§]



[†] The Solid Waste Utility has since been incorporated into Seattle Public Utilities.

[§] In 1998, Waste Management (Recycle America) was purchased by USA Waste, and Rabanco (Recycle Seattle, US Disposal) was purchased by Allied Industries. Negotiations are underway to bring State franchised services under City contract.

The Flow of Discarded Materials



Collection Contracts

The City contracts with private collectors to pick up residential garbage, yard waste, and recyclables. These contracts end in March 2000. At present there are eight collection contracts (see Figure 7.1).

The City engages multiple contractors to encourage competitive bids for services and keep several collection companies active in the area. Maintaining a competitive environment helps keep residential collection rates as low as possible.

Commercial garbage is collected by two private companies franchised by the Washington Utilities and Transportation Commission (WUTC) (see Figure 7.1). The City is in the process of contracting directly for commercial garbage collection (see Chapter 1).

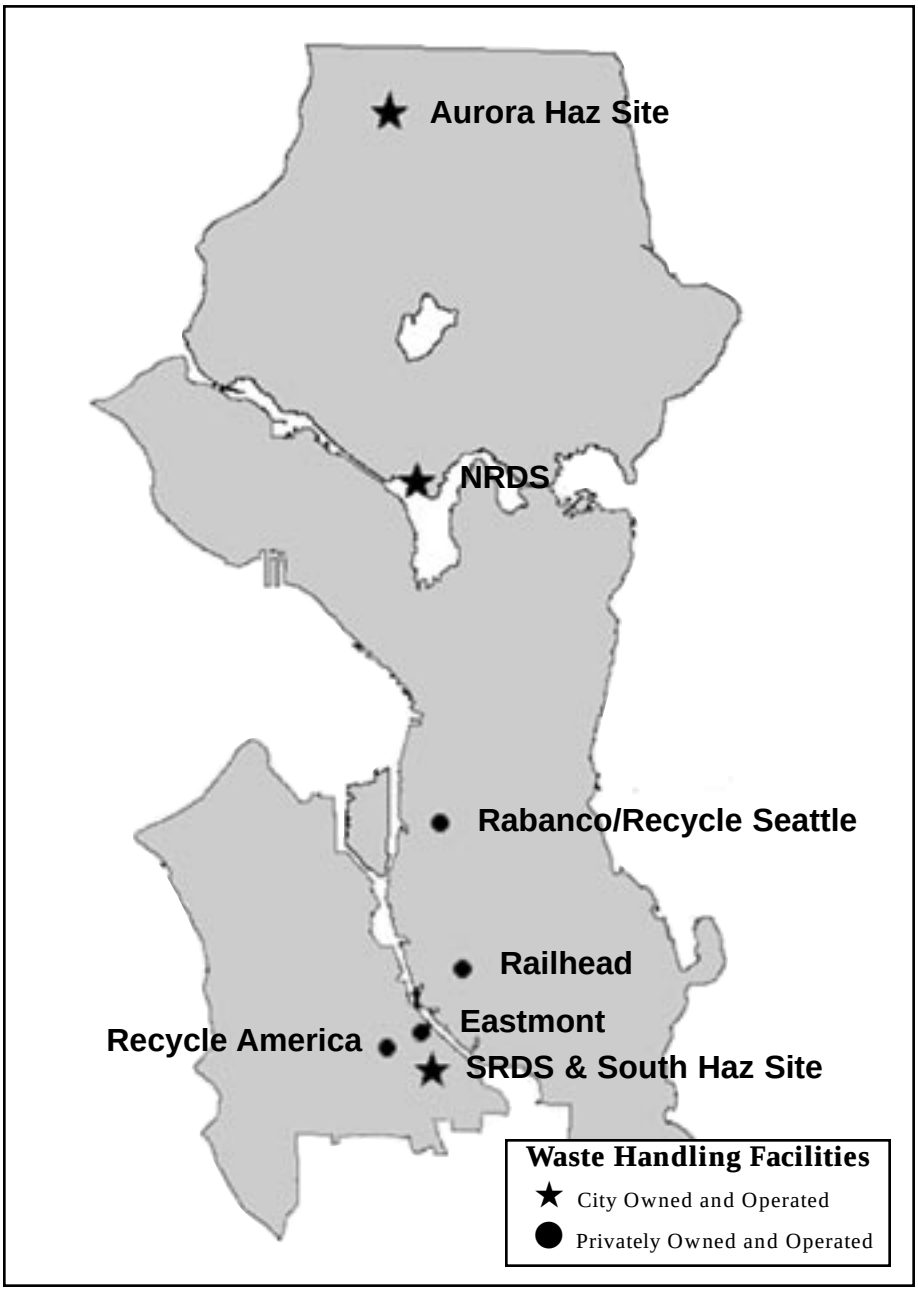
Commercial recyclables are collected by many companies in a free-market environment. Some are primarily collection companies that sort and market the recyclables to other processors. Some are primarily processing companies (especially paper companies) that collect particular materials for processing at their own facilities.

Materials Flow

After materials are collected or self-hauled from homes and businesses, they go their separate ways, passing through one or more of the solid waste handling facilities shown in Figure 7.2:

- City-owned and operated North and South Recycling and Disposal Stations, and Aurora and South Seattle Haz Sites for collection of household hazardous wastes.
- Privately owned and operated transfer stations (Waste Management, Inc's Eastmont Station in South Seattle, and Rabanco Inc.'s at Third Avenue and Lander).

Figure 7.2 Seattle's Solid Waste Handling Facilities



- Privately-owned sorting facility for recyclables (Recycle America and Recycle Seattle).
- The privately-owned railhead at 4th Avenue South and South Dawson.

Yard waste and recyclables stay in the materials loop. Garbage – everything not recycled or composted – leaves the cycle and dead-ends in perpetuity in a landfill.

The flow of residential recyclables, yard waste, and garbage to the different facilities is defined by the City's collection contracts.

Sorting Recyclables at a Private Facility

Recyclables

Recyclables are taken directly to processors, or to sorting plants that separate materials and prepare them for market. Recycle America and Recycle Seattle sort Seattle's residential recyclables, some business recyclables, and some recyclables self-hauled to transfer stations. Recyclables are then sold to U.S. and overseas firms, which make new products from old.

Yard Waste

Yard waste collected from residences goes to the City's North Recycling and Disposal Station or Rabanco's transfer station; yard waste is self-hauled to both City stations. From there, it is loaded into shipping containers and hauled by truck to Cedar Grove Composting in King County. Yard waste is then transformed into compost, which comes back to nurture our gardens, parks, and landscapes.

Garbage

Residential and self-hauled garbage currently flows to the City's North and South Recycling and Disposal Stations. Commercial garbage currently flows to the two privately-owned and operated transfer stations The private stations also accept construction and demolition debris from commercial self-haulers.

Containers Full of Garbage Being Hoisted onto the Train

Disposal

At the transfer stations, garbage is compacted into shipping containers, then trucked to the railhead. At the railhead, containers are hoisted onto trains that take them to the privately owned and operated Arlington landfill in eastern Oregon. This facility was selected as the destination of Seattle's garbage after an extensive public process.

Seattle's Garbage Arriving at the Arlington, Oregon Landfill – Dead-end for Non-recyclable Garbage

The 1989 plan, *On the Road to Recovery,* presented citizens with four alternatives:

- Continue using landfill at Cedar Hills
- Build a waste-to-energy facility in the Duwamish industrial zone
- Contract to "put or pay" with the Tulalip Tribes for a waste-to-energy facility north of Everett
- Transport garbage to an arid landfill east of the Cascades

Seattle chose long-haul to an eastside landfill as its preferred option because with little rainfall, the problems of leachate and methane gas generation would be minimized. An arid landfill in a sparsely populated place would also have a longer lifetime and fewer social impacts. The City decided any landfill chosen would be required to meet Washington Department of Ecology's stringent standards for landfills in (wet) western Washington, because of Seattle's commitment to good stewardship in our own and others' back yards.

In spring 1990, the City signed a 38-year contract with Washington Waste Systems (a subsidiary of Waste Management, Inc.). In 1996, the contract was renegotiated. The 2001 opt out date was extended to new opt out dates in 2006, 2007, and 2008. In return the City received an immediate reduction in per ton price, a decrease in the annual escalator, and a second per ton decrease in 2002. The current contract ends in 2028.

Kent Highlands Landfill – Aerial View after Closure

Closure of Historic Landfills

Between 1900 and the opening of the Midway landfill in 1966 and the Kent Highlands landfill in 1968, Seattle used numerous places to dispose of its wastes: the Interbay, Genesee, Haller Lake, South Park, Mountlake/Ravenna, West Seattle, and Green Lake landfills, to name a few.

In the 1980s the U.S. Environmental Protection Agency (EPA) designated Seattle's two landfills, Midway and Kent, as Superfund sites. The City stopped using Midway in 1983 and Kent in 1986.

Seattle used best management practices in closing the two landfills. In 1991 Midway landfill's closure construction was completed to the EPA's satisfaction, and post-closure maintenance and environmental monitoring began. In 1995 closure construction was completed on the Kent landfill, and post-closure maintenance and environmental monitoring began.

Results of monitoring at both landfills show steady progress within acceptable limits of emissions and leachates. The topsoil of Kent Highlands was amended with Cedar Grove compost, and planted with wildflowers. Once the EPA deems both to have successfully completed the 30-year monitoring period, they could be opened to the public for recreation. As some of the last remaining open space in a rapidly urbanizing area, they will likely be an asset to their surrounding communities.

None of the older landfills have been designated as sites requiring cleanup. If problems arise they are handled on a case by case basis.

Pile of Tires at South Recycling and Disposal Station

Wastes that Require Special Handling

Used Tires and Old Refrigerators

Used tires and old refrigerators present particular problems and are handled specially. Regulations ban release of freon, a common

refrigerant, to the environment. Refrigerators also contain capacitors which must be removed and properly handled as some old capacitors contain polychlorinated biphenyls (PCBs). Seattle contracts with a private firm to process all refrigerators received at the Recycling and Disposal stations**.** Tires are banned from Seattle's garbage. They are collected by tire distributors, service stations, private recyclers, and at the City's North and South Recycling and Disposal Stations (where there's a limit of four per load). Used tires are mostly shredded for use as industrial fuel.

Moderate Risk Wastes

Moderate risk wastes are banned from the garbage. As a participant in the regional Local Hazardous Waste Management Program, Seattle provides for collection of household hazardous wastes (HHW) at its two Haz Sites at the South Recycling and Disposal Station and at the Aurora site on North 125th and Stone Avenue North. Some of the reusable materials, such as latex paint, are salvaged. The rest are sorted into categories such as poisons, flammables, acids, and bases. Some products, such as motor oil, are re-refined; others, such as solvents, are shipped to facilities where they are blended for special fuel. Others are disposed at regulated hazardous waste facilities.

Small quantity generator wastes (SQGW) from entities other than households are handled by regulated private companies.

Special Category Wastes

Asbestos. The State Puget Sound Air Pollution Control Authority (PSAPCA) enforces regulations regarding removal and disposal of asbestos; permits are required for asbestos removal. Asbestos-containing waste must be wetted down, sealed into leak-tight containers or plastic bags with a thickness of greater than six mils, and identified by proper warning labels. Bagged asbestos is taken to the two private transfer stations in the City, which are authorized by the Health Department to handle asbestos. The bagged material may be landfilled at a municipal solid waste landfill.

Biosolids. Biosolids that accumulate in wastewater treatment plants are handled by King County according to federal regulations. They are mostly transported to eastern Washington for land application as fertilizer.

Biomedical Waste. Biomedical wastes must be collected and disposed of according to Health Department regulations. Most of Seattle's biomedical waste is currently collected by Stericycle of Washington and transported for treatment. About 1% of biomedical waste collected by Stericycle is anatomical waste, and is sent to BFI Medical Waste Systems for incineration. Many "sharps" are separately collected by BFI and incinerated at the Recomp Incinerator in Ferndale. Needles and other sharps used at home may be taken to special containers at the City's North and South Recycling and

Disposal Stations, the Eastmont transfer station, and designated pharmacies and hospitals, if they are properly contained. Sharps received at transfer stations are specially landfilled.

Results

How have we done in achieving the 1989 goals of disposing of nonrecyclable waste safely, closing the old landfills, and improving cost effectiveness and efficiency of the system?

- Seattle has established a contracting system for collection which encourages competition and supports multiple service providers.
- Because recyclables have value, which is reflected in collection contract costs, City residents have saved millions of dollars since 1989 by separating recycling from their garbage.
- Seattle residents are generally "very satisfied" with garbage, recycling, and yard waste collection services.
- In 1995, Seattle's household hazardous waste collection programs kept 320 tons of hazardous chemicals out of the garbage, and 35,000 gallons of oil out of storm drains. Private companies which accept used motor oil from the public have diverted many more thousands of gallons of used motor oil from contaminating Puget Sound.
- Seattle has a contract with Washington Waste Systems to dispose of its garbage at the Arlington, Oregon arid landfill through the year 2028.
- Landfill closure construction was completed, and post-closure maintenance and environmental monitoring begun at Midway Landfill in 1991 and Kent Highlands Landfill in 1995. Both landfills are meeting environmental safety standards for closure as monitoring continues through 2024.

WHAT ARE CURRENT NEEDS AND OPPORTUNITIES?

The way the collection and transfer system is currently configured – who collects what material, how, from which customer sector, and where it gets taken – are all elements of the City's existing contracts or the WUTC franchise arrangements.

In March 2000 all eight residential contracts, which have been in place for ten years, will expire. In executing new contracts, the City can choose to make changes. At the same time, the City soon expects to enter into contracts for commercial garbage collection. This will add more customers and more waste to the system under City contract, providing opportunities to integrate the commercial waste stream into the City-controlled system.

These new contracts will offer an exciting opportunity to reconfigure

the entire system. For example, the City could choose to change:

- How materials are collected
- How often materials are collected
- How materials flow to the transfer stations
- How different contractors' territories are defined

Doing this in a way that creates the most efficient and integrated system has evolved as a key goal for Seattle Public Utilities (SPU). In addition to maximizing efficiency, a variety of changes could be made in response to concerns brought up by customers since the existing contracts began.

Garbage Collection North of Yesler

SPU staff developed a new System Analysis Model (SAM) as an adjunct to the Recycling Potential Assessment (RPA) model to evaluate the possible economic benefits of these potential changes. (See Technical Support Document for a detailed description of the model.) The model is a tool to help SPU understand some of the possibilities for system improvement as the new collection contracts are developed. The contracting process also provides an opportunity for the private sector to propose other creative solutions for increasing system efficiency.

Although the opportunity to make changes is exciting, it must be weighed against the disadvantage of major customer disruption. The whole system underwent a radical overhaul less than ten years ago with the start of curbside garbage collection and the new recycling and yard waste programs. Most residents say they like the current system. In other words, "it ain't broke," and there is little public demand for major changes.

No needs or opportunities for disposal are considered because the City's current long term landfill contract provides an economic disposal option for non-recycled garbage through 2028.

Collection and Transfer

Maximizing Efficiency

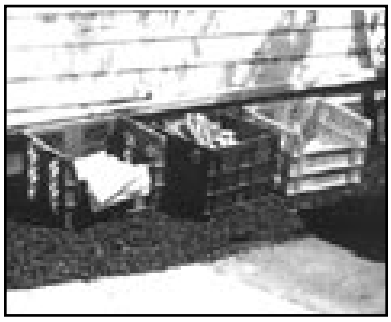
Using SAM, SPU staff modeled multiple scenarios for collection and flow of garbage, yard waste, and recyclables in order to explore a wide range of possibilities, to evaluate the aspects of the system which had the greatest influence on overall cost, and to identify the capacity limits of various transfer locations.

The variables explored were:

- C***o-collecting various combinations of garbage, recyclables, food waste and yard waste.*** Currently garbage, yard waste, and recyclables are picked up in separate trucks. Citywide, an average of 2.18 trucks travel each street each week for single family collection.[‡] Trucks collecting garbage and recyclables from multi-family residents and businesses add to the total number of trucks on the streets. Citizens have asked about the economic and environmental (pollution, fuel use) effects of the number of trucks on the street because of multiple collections. Since 1989, new trucks have been developed with two or more compartments so two or three different materials can be collected with one truck.
- ***Commingled as well as separate collection of yard waste and food waste.*** Both food waste and yard waste are organic materials that can be processed through aerobic composting. Food scraps would need to be mixed with other organic materials (such as wood chips or yard waste) in a roughly 1:2 ratio to provide the necessary matrix.

  Commingling in the truck would not necessarily mean commingling in curbside containers. Separate containers could be used to control odor and pests at the curb, and both containers could be emptied into the same collection vehicle.
- ***Two-bin versus three-bin collection of recyclables.*** North of the Ship Canal, recyclables are sorted into three stackable containers; south of the Ship Canal, recyclables are sorted into a 60 or 90-gallon cart with an insert for glass and ferrous metals. SAM modeled both these systems citywide.
- ***Changes in frequency of collection for garbage, yard waste, and recyclables.*** Currently single family garbage is collected weekly; recycling is collected monthly south of the Ship Canal and weekly in the north. Commercial and multi-family dumpster collection frequency varies according to customers' needs. In summer, yard waste is collected weekly north of the Ship Canal and every other week south of the Ship Canal. In winter, collection frequency is reduced to once a month. SAM modeled collection of garbage, yard waste, and recyclables every other week, with variable frequencies for yard waste in summer and winter. Garbage collection was modeled on both a weekly and every-other-week basis.

Commingled Recycling South of the Ship Canal



Three Bin Curbside Recycling North of the Ship Canal

[‡] Because of the differences between contracts, frequency varies in different part of the City. Averaged throughout the year, frequency north of the Ship Canal is a little over 2.5 trucks/week; south of Yesler a little over 1.5 trucks/week; and between Yesler and the Ship Canal approximately two trucks/week.

At present the Seattle-King County Health Department requires at least weekly garbage collection, although less frequent collection has been successful elsewhere, and every-other-week collection has recently started in Olympia. Weekly collection is considered necessary because of food wastes, which rot. If food were banned from the garbage, every-other-week garbage collection could be feasible.

- ***Redistributing transfer for all materials.*** It is assumed that efficiency increases with shorter travel time from collection to transfer point.[≠] On this basis, SAM identified the transfer point which resulted in minimum travel time for all residential and commercial garbage collection trucks.

  For recyclables the existing processing facilities were assumed. Other criteria directed assumptions about the flow of organic materials. Because of capacity constraints and the closeness of residential neighbors, SPU would not transfer food wastes at the North Recycling and Disposal Station, and prefers not to transfer contractor-collected yard wastes at the North Station. SPU would also prefer not to transfer food wastes at the South Recycling and Disposal Station, but rather at a private facility.

  Modifications to these flow scenarios were made based on capacity constraints, especially at the North Recycling and Disposal Station, which provides the only existing capacity in north Seattle. Because of this limited north end capacity, SAM also modeled the use of King County's First Avenue Northeast transfer station in Shoreline.

- ***Eliminating transfer from the system.*** Efficiency can be increased by reducing handling of materials. Elimination of transfer would remove a step in the overall system process. New technologies already available for containerized garbage collection and direct haul to landfills could be modified to fit Seattle's garbage-by-rail system. Similarly, container collection and delivery of organic materials directly to processing or specialized pre-processing facilities could be feasible.

The results of this analysis are as follows:

- In co-collection scenarios, a key determinant was transfer location. For co-collection to be efficient, the collected materials must both be transferred at the same point, which imposes some limitations. For instance, co-collection of recyclables with other materials would probably not be efficient.
- Co-collection also assumes the same collection frequency for the co-collected materials, which might not be the most efficient strategy.

[≠] Other factors could affect this assumption, such as time (shortest is not always fastest), and possibly location of collection truck yards.

North Recycling and Disposal Station

South Recycling and Disposal Station

- Given these constraints, co collection appears not to be more efficient than separate collection for a three stream (garbage, yard waste, recycling) system. If food waste is added, co-collection with garbage may be a more efficient scenario.
- Commingled collection of yard waste and food waste could also be more efficient than separate collection of food waste. The feasibility of commingled collection would depend partly on the needs of the processing facility.
- In comparing the costs of different recycling strategies, SAM found that the north end three-bin system was less costly than the south end commingled system, based on current cost and assuming every-other-week collection. This is inconsistent with information from other parts of the United States, which suggest that commingled collection of recyclables is more efficient.
- Reduced collection frequencies offer the greatest opportunity for cost-savings, and also reduce the number of trucks on the road.
- The most efficient flow for garbage is to transfer at the closest facility. Because of the distribution of transfer locations (see Figure 7.2) the theoretically most efficient system would distribute both residential and commercial garbage between the North Recycling and Disposal Station, Rabanco, and Eastmont/South Recycling and Disposal Station. In practice, contract negotiations will likely influence the final flow.
- Slight efficiencies could be realized if the First Avenue Northeast Station were used for garbage transfer. However, the model did not include any costs associated with upgrading the station or further environmental assessment and community coordination.

If the City wanted to pursue this option, further analysis and discussions with King County, the City of Shoreline, and station neighbors would be necessary.

- If the City chooses not to accept contractor-collected yard waste and food waste at the North Recycling and Disposal Station, the material will have to be transferred at the South Recycling and Disposal Station, or an alternative private facility. This may slightly increase the overall system cost.
- By-passing transfer for garbage or yard waste and delivering directly to the railhead or a processing facility would provide system efficiencies. The extent of these efficiencies would depend on the technology available.

Defining Contractor Territories

Since all residential contracts are coming up for renewal in year 2000, the City can choose whether to continue to separate yard waste and garbage from recycling collection, whether and how to divide the City geographically, and whether to create the same multi-family and single family distinctions. The addition of commercial garbage contracts creates even more possible new combinations.

Serving Customers

Balancing efficiency with customer service is an important aspect of decision-making about collection system changes. As services are different in different parts of the City, the benefits of providing equal service levels citywide must be balanced against the costs of changing services.

Issues which directly affect customers include collection day, collection frequency, and the container the material is set out in. Most customers indicate a preference for setting out materials on the same day, rather than garbage on one day and recyclables on another.

Responses to the Draft Solid Waste Plan (see Chapter 3) show that the majority of single family residents will support every-other-week collection for garbage and recyclables if it helps keep rates low. The same is true for switching to a two-bin recycling collection system citywide.

Another issue for customers involves service complaints and compliments. Missed collections are frustrating for customers who experience them, especially if the problem is not resolved quickly. The City's collection contracts include conditions and enforcement provisions about responding to missed collections. Misses represent less than 1% of all pick ups.

SPU also receives many compliments about the helpfulness of collection drivers, who are out working hard in rain, sleet, or hot sunshine. They are our neighbors, and the garbage and recycling trucks are part of our neighborhoods every week.

City staff receive customer service complaints, and City-employed inspectors are in the field to respond to difficulties. Resolution of complaints depends on communication between the contractors and SPU. Over the years, communication has improved as a result of experience.

The disadvantage of having City staff take customer complaints is the communication challenge, and the opportunity for both sides to pass the buck. The advantage is the City can oversee the quality of services for which its customers are paying. Contractors don't lose customers as a result of poor customer service, but by contract they do lose money for failing to conform to certain requirements.

Landscape Contractors Self-hauling Yard Waste to the North Recycling and Disposal Station

Future contracts need to maintain high customer service standards and penalties for non-performance.

Facilities

City Recycling and Disposal Stations

The City's North and South Recycling and Disposal Stations provide transfer services for contractor-collected garbage and yard waste. The North Recycling and Disposal Station is particularly important because it is the only north end transfer facility in Seattle.

The Recycling and Disposal stations also provide drop-off services for self-haul customers. This service is popular and well used. The two Recycling and Disposal stations received 236,244 self-haul customers in 1995, 70% trucks and 30% autos. Over half the City's self-haul customers use the North Recycling and Disposal Station.

Scale attendants Anthony Grant and Henry Davis welcome customers to the Recycling and Disposal station

In the 30 years since they were built, the City has made only minor capital investments in the two Recycling and Disposal station facilities, although their role has expanded dramatically since the 1960's. Capital investment is needed to perform critical facility repairs (such as seismic upgrading and drainage improvements), provide operational enhancements (such as a new maintenance building) and expand station capabilities (such as improvements for recycling or food waste transfer).

Capital improvements should ensure that the Recycling and Disposal stations are good neighbors. Besides traffic, the chief impacts of transfer stations on neighboring communities are noise, odor, litter, dust, and aesthetics. During the past few years, significant modifications have been made at the North Recycling and Disposal Station to control noise, odor and dust. These include limiting hours

of access, cleaning the pit nightly, and installing noise insulation and a misting system. Hours of operation have also been limited to reduce neighborhood impacts.

Space constraints and the closeness of neighbors limit the North Recycling and Disposal Station more than the South Station. In the future, SPU would prefer not to accept contractor-collected organic materials at the North Station. In this case, all yard waste would flow to the South Station, or to a private facility. Although SPU would prefer not to accept food waste at the South Station, some of the more cost-effective collection strategies include co-collection with garbage, or commingled collection with yard waste. In either of these cases, the combined load would be transferred at one facility, either the South Station or a private facility, and would require capital improvements to ensure proper handling.[1,2]

Queuing at North Recycling and Disposal Station on a Fine Saturday Morning

If future contacts involve the traditional collection-transfer-disposal system, both stations are likely to continue to receive garbage from residential and / or commercial sources.

On a per ton basis, the cost of providing transfer services for self-haul customers is much higher than the cost of handling contractor-collected garbage and yard waste because there are many vehicles with relatively little waste. However, the collection of self-haul wastes is important to the system, and is a much needed service for both residential and business customers. The previous chapter discusses improvements to the recycling system at the North and South Recycling and Disposal Stations. In the future these two stations will play a larger role in the City's overall material recovery goals, especially for self-haul wastes.

If technological developments lead the City to a system in which the most cost-effective strategy is to haul garbage directly to a railhead, and organic materials directly to processing facilities, then the City's Recycling and Disposal stations will be limited primarily to self-haul. In this case the option of closing one of the stations needs to be evaluated. A preliminary analysis of self-haul trips indicates that even in this situation, one station would be hard-pressed to handle all the self-haul traffic on weekends. Closure of one of the stations would also reduce customer service and possibly increase illegal dumping.

Needs and opportunities to improve recycling at the City's stations were discussed in Chapter 6.

Organic Materials Processing Facilities

At present, all yard waste collected at curbside and self-hauled to the transfer stations is processed at the privately owned and operated Cedar Grove composting facility located in Maple Valley. The flow of organic material varies considerably in both quantity and type, depending on the season and the weather. For instance, 1997 was a wet summer, with an unusually high tonnage of grass clippings. After the Inaugural Day storm in early 1993, there was an enormous amount of woody material. Yard waste typically peaks between March and July. Seattle sends an average of 50,000 tons of yard debris a year, most of it collected from the curbside program. Cedar Grove also handles yard waste from other parts of King County and 8,000 tons of preconsumer vegetative food waste from grocery stores and restaurants (75% of this is from Seattle businesses).

In the past two years, three yard waste processing facilities in the area have closed due to regulatory and odor problems. Cedar Grove has struggled with on-going processing and odor difficulties, in part because of the quantity of yard waste sent to the facility which in 1997 reached approximately 200,000 tons.

There is a need to maintain access to adequate and affordable yard waste composting capacity in the area or available through long-haul, and to ensure flexibility in handling varying quantities and varying conditions.

The need for food waste processing capacity was mentioned in the previous chapter. The development of an aerobic or anaerobic processing facility would support the City's new recycling goal.

There is also a need to ensure facility standards that prevent odors and other problems, but which are fair and not prohibitive to the on-going recovery of organic materials. In its first set of collection contracts, the City allowed customers to set out yard waste in plastic bags. This practice has caused problems at the processing facility and should be eliminated.

Household Hazardous Waste Collection

The City operates two Haz Sites for collection of Household Hazardous Waste. The South Recycling and Disposal Station facility is available to all customers during selected open hours. The Aurora site receives wastes by appointment. The reason for the appointment system is to control quantities of material and queues, consistent with our agreement with the Haller Lake community when the facility was first established. Some customers have argued that the appointment system unnecessarily limits access to the service.

There is an opportunity to evaluate strategies which make the Aurora Haz Site more accessible, without causing conditions that would trouble the neighborhood.

THE SYSTEM ON THE PATH TO SUSTAINABILITY

Goal

The system goal of this Plan is:

To increase the efficiency, fairness, convenience, and accessibility of services.

The upcoming need for new collection contracts, and the addition of commercial garbage contracts, offers an important opportunity to improve the overall collection and transfer system. In negotiating new contracts, the City will draw on all that has been learned about customer needs as well as the technicalities of collecting separated wastes during the past nine years.

In this new Plan, the City reconfirms its commitment to decrease the negative impacts of collection and transfer on the environment and local communities; to dispose of non-recycled residuals in a landfill; and ensure that both current and closed landfills are managed to protect the environment.

Programs for the Future

In September 1998, the City will release a Request for Proposal for new residential collection contracts. New services will start in April 2000. As in 1988, the City will be divided into three sectors. Contracts will be awarded to at least two bidders, who will provide service in one or two sectors. This system provides for competitive bidding now and in the future. The new contracts will cover all services in each sector: garbage, yard waste, recycling, and food waste collection. Bids will also include processing of collected materials. One contractor for all services will allow for better integration of services; for example, providing service based on container type rather than building type.

- In the future, customers will not be allowed to set yard waste at the curb in plastic bags as this causes problems at processing facilities.
- The new system will provide same day collection of all materials from single family residences.
- In making a final decision about collection frequencies for single family yard waste and recycling, and about sorting recyclables, the City will balance customer service, cost, and environmental concerns. This final decision will be made by the City Council in 1999 when the new collection contracts are negotiated. A decision about customer or City ownership of garbage cans will also be made at this time.
- The City will work with the Health Department to evaluate and test

the feasibility of collecting garbage every other week.

- Generally the City supports a flexible approach to selecting efficient transfer points for garbage and organic wastes. Materials flow will be determined as the new contracts are finalized. Specific constraints are that the City will not accept contractor-collected yard waste or food waste at the North Recycling and Disposal Station and prefers not to accept food waste for transfer at the South Station.

Scrap metal is a significant portion of recycling accepted at City Recycling and Disposal stations.

- SPU will invest in capital improvements at the North Recycling and Disposal Station. *A Plan for Seattle's Recycling and Disposal Stations* describes plans to perform critical facility repairs, operational enhancements, and expand station capabilities.
- The City will continue to manage the Recycling and Disposal stations to minimize neighborhood impacts. Significant modifications have already been made at the North Station to control odor, noise and dust. Improvements are also planned for the South Station.
- In evaluating the new contract proposals, the City will establish environmental standards or performance criteria for organic materials processing facilities that will help keep negative impacts to a minimum.
- Long-haul landfill disposal of garbage will continue.
- The former Kent Highlands and Midway landfills will be closely monitored.

Self-haulers unload at the pit, South Recycling and Disposal Station.

Endnotes

[1] City of Seattle, *Preliminary Evaluation Assessment - Foodwaste Transfer and Dewatering Study.* Herrera Environmental Consultants, August 1996.

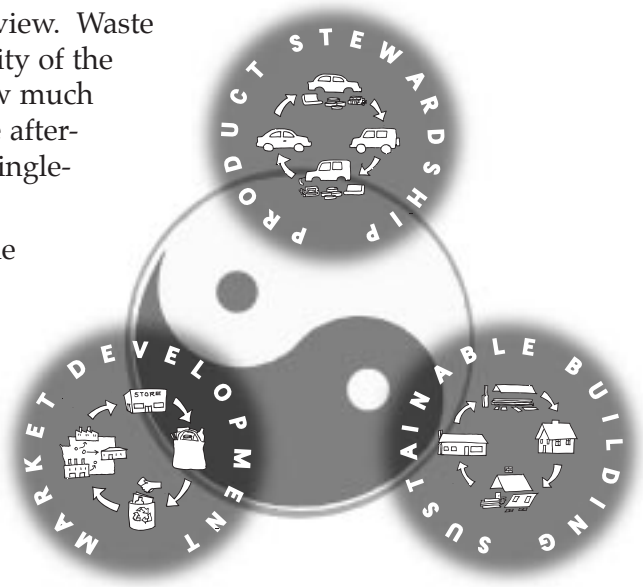
[2] City of Seattle, *Preliminary Design Concepts - Foodwaste Transfer and Dewatering Study.* Herrera Environmental Consultants, May 1997.

Chapter 8: Closing the Loop

"True journey is return."

– Ursula K. Le Guin

In previous chapters of this Plan most of the emphasis has been on managing waste from the consumer's point of view. Waste reduction is presented primarily as the responsibility of the business person or resident making choices about how much and what to buy, or not buy. Recycling deals with the after-the-fact problem of handling discards, ranging from single-use containers to durable goods.



Another important link between the beginning and the end of the life cycle of a material or product is the connection between producers and consumers. For instance, the consumer can't choose durable or repairable goods if they aren't available. Manufacturers won't make recycled-content products if no one will buy them.

This chapter comes full circle to describe more holistic, or integrated strategies for sustainable waste management. It describes market development, product stewardship, and sustainable building. These strategies reflect the responsibilities of both consumers and producers in waste management, and underscore the need for us all to work together to protect the Earth's resources and preserve the quality of life.

Separation and Collection of Recyclables

Re-manufacture with Recycled Feedstocks

Purchase of New Recycled-Content Products

WHAT IS CLOSING THE LOOP?

Market Development

Market development activities support new local or regional processing and re-manufacturing capacity and stimulate consumer demand for recycled-content products.

No matter how many Seattle residents and businesses separate materials for recycling, success depends on the existence of markets for separated materials. Markets for recycled feedstocks exist only if the manufacturers who use them can sell their products. This cycle is commonly illustrated by the chasing arrows symbol (left). All three arrows have to be strong and healthy for the system to work.

Market development is critical to the long term cost-effectiveness and evolution of recycling. More stable and more diverse markets (multiple processors/or uses for the same material) increase material value. New processes and facilities for new materials increase the types of materials Seattleites can recycle. The more often businesses, residents, and public agencies purchase products made of recycled material, the more these markets will strengthen and become a more fundamental part of commerce. Market development supports recycling by making it more cost-effective, and by increasing the number of materials that *can* be recycled and thus diverted from the landfill. It also offers possibilities for economic development by Seattle's neighborhood entrepreneurs and larger industrial and commercial firms.

During the past eight years, local market development programs have been primarily the responsibility of the King County Commission for Marketing Recyclable Materials (KCCMRM) and the Clean Washington Center (a program of the State Department of Community, Trade, and Economic Development). Until now the City has chosen to play a relatively minor role in market development because these other agencies have assumed the primary responsibility.

The Clean Washington Center has focused primarily on research and development assistance to processors and manufacturers. In 1996 the Center prepared a report, *The Future of Recycling,* at the direction of the Governor. The report included recommendations by a task force of diverse interests, which unanimously supported the need for ongoing market development.[1] However, the State legislature chose not to continue funding the Clean Washington Center.

The primary focus of the KCCMRM has been to increase consumer demand from both residential and business consumers, and to encourage retailers to carry recycled-content products. Its Get in the Loop campaign promoted recycled-content consumer products in a variety of retail outlets, Get in the Loop at the Office gave businesses the opportunity to sample recycled office products, and the Shift Gears program promoted the purchase of re-refined oil.

Product Stewardship

Product stewardship brings manufacturers and retailers into partnership with consumers in environmental stewardship. It offers a cost-effective way to manage wastes and responds to the concerns of many Seattle citizens. Product stewardship includes a wide range of possibilities that mark a significant change in how we think about waste. This new way of thinking could lead to practices which reduce the need for the public sector to provide extensive material collection services.

For packaging (cans, bottles, cartons, etc.) alone, the U.S. uses approximately:

50% of its paper

75% of its glass

40% of its aluminum

30% of its plastic[3]

In its fullest meaning, product stewardship means that the producer (maker or distributor) of a product takes responsibility for all phases of its life. Stewardship is based on understanding that the economy and the environment are linked, and that depletion of finite resources ultimately has economic consequences for all of us. From the perspective of waste management, product stewardship can include:

- Making products of the most sustainable, recyclable, and least pollution-producing materials possible.
- Minimizing packaging, and/or using packaging made from compostable, recyclable, or re-usable materials.
- Designing products so they are durable and repairable.
- Designing products so they can be disassembled and the components given a new life when their old life is done.
- Accepting discarded products for disassembly, reclamation and recycling, or otherwise providing the infrastructure to support the reincarnation of the product.

Product stewardship is becoming more common in parts of Europe, Asia, and Canada. American companies that sell their products abroad are already designing for these overseas markets, and are starting to bring some of the ideas to the U.S.

What is Product Stewardship?[2]

Product stewardship means that a company accepts responsibility for managing the environmental impacts generated in all stages of a product's life cycle, with the objectives of closing the production/consumption loop and minimizing harmful environmental effects. The eight stages in the life cycle of a product are:

Pre-consumer

1. Product design
2. Resource inputs
3. Manufacturing
4. Packaging, storage, and distribution

Consumer

5. Use and re-use

Post-consumer

6. Collection and recycling of obsolete products
7. Marketing recycled resources
8. Waste management of residuals

Buildings represent half of our nation's wealth. In 1993, new construction and renovation activity amounted to $800 billion, or 13% of the GDP, and employed ten million people.[4] Worldwide, buildings use 1/6 of the world's fresh water, 1/4 of its timber, and 2/5 of its material and energy flows.[5]

Sustainable Building

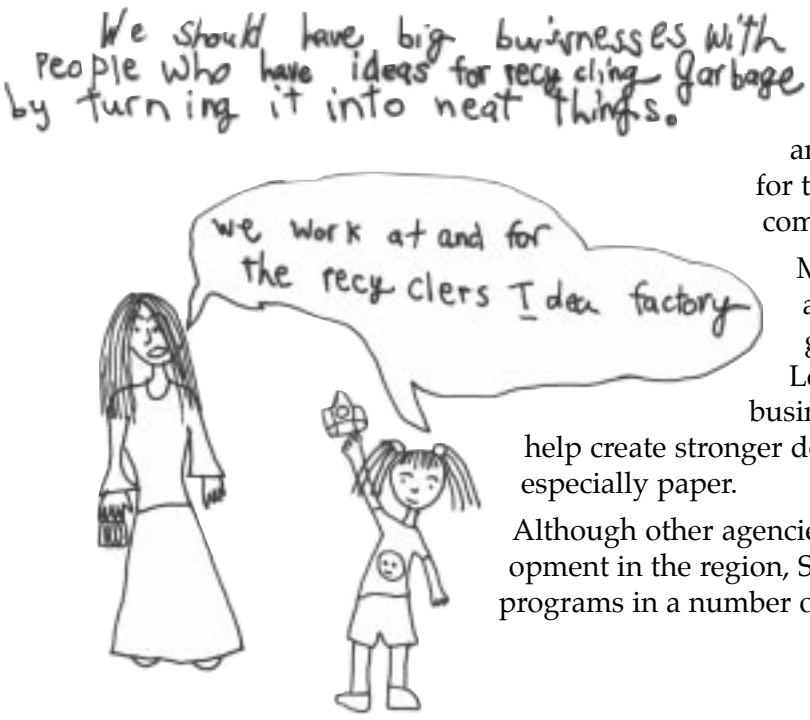
Sustainable building conserves natural resources and improves environmental quality throughout the building's life. A sustainable building is designed for maximum energy efficiency, water and resource conservation, and minimal indoor air pollution. It is built using recycled-content materials, maybe even salvaged materials, and materials that are sustainably harvested and/or resource-efficient. A sustainable building makes the best use of its site, optimizes the use of available light, makes space for recycling, and even has a resource efficient landscape. Rather than building homes and businesses that fit the Earth to our ends, sustainable building enhances our ability to live in harmony with the natural world.

What Have We Achieved Since 1989?

The 1989 Plan, *On the Road to Recovery* had no specific goals for market development, product stewardship, or sustainable building. The initiatives described in this chapter have evolved since 1989 and are critical elements of sustainable waste management.

Market Development

Thanks in part to the recycling commitment by communities throughout the region, including the work of the Clean Washington Center and Marketing Commission, new processing facilities for recyclables from paper to glass to asphalt have opened up. At the same time, some markets have faced challenges and closure, including the local market for tin cans and several local yard waste composting facilities.



Many more recycled-content products are now available on the shelves of grocery stores and hardware stores. Local governments, institutions, and businesses have used their buying power to help create stronger demand for buying recycled products, especially paper.

Although other agencies have taken the lead in market development in the region, Seattle has helped support its recycling programs in a number of ways:

- Newspaper articles, the *Curb Waste Times*, and other outreach have promoted the idea of buying recycled to residents.
- Seattle has helped promote the benefits of compost products through testing and analysis for product quality, product growth trials, demonstration sites, the *Landscapers' Compost Handbook*, and technical assistance.
- Through the Business and Industry Recycling Venture (BIRV), the City has coordinated local business participation in the National Recycling Coalition's Buy Recycled Alliance.

Product Stewardship

Some manufacturers, distributors, and retailers already think sustainably, and have taken steps toward product stewardship. For example, more manufacturers are using recyclable or minimal packaging; distributors are taking back used motor oil for re-refining or milk bottles for re-use; retailers are encouraging re-use by selling reusable coffee mugs and offering a credit for re-using grocery bags.

Seattle Public Utilities (SPU) has begun fostering product stewardship during the past year. Seattleites support further efforts; for example, 92% said they wanted the City to play a role in reducing packaging.[6]

Over 90% of both residential and business respondents to the Draft Solid Waste Plan questionnaire also agreed the City should work with producers to help them reduce packaging.[7]

In 1997, a Less is More grant supported a project that developed information about Wastewise Packaging, and educated nearly 100 businesses about packaging reduction.

In recent years enough people have complained about unwanted mail that the Direct Marketing Association has developed an initiative to give consumers a choice about direct mail. The initiative will require association members to honor the principles of "consumer notice" and "opt out" for direct mail.

Jim Riley of Schuck's Auto Parts in Ballard displays the vehicle batteries this responsible merchant accepts for recycling.

In a survey about household hazardous products[8] 66% of Seattle residents favored the idea of requiring merchants who sell hazardous chemicals to take back leftovers; 72% favored adding a deposit to the purchasing price to be refunded when the empty container was returned; and 72% favored a non-refundable fee to help pay for disposal and clean up.

Sustainable Building

Seattle City Light and Seattle Public Utilities have joined forces to integrate sustainable building practices into their various programs. In 1996, the City joined Seattle Public Schools in a Partnership for Resource-Efficient Schools, to promote sustainability in the District's

new capital development projects.

From the solid waste perspective, the initial effort was to increase recycling of construction and demolition wastes, both those going into the municipal solid waste garbage, and those being separated for C&D landfilling. Seattle and King County sponsored site trials and demonstration projects to test the feasibility and cost-effectiveness of job site waste reduction and recycling. They also worked together to provide education and resources about recycling construction debris. In 1994 Seattle made C&D waste reduction and recycling a new and important part of the BIRV's outreach program.

In many ways the private sector has led sustainable building efforts. Future promotion of sustainable building depends on cooperative efforts between all City departments, other jurisdictions, and private businesses.

Specific activities undertaken by the City include those listed below:

- In 1994 the City sponsored a Model Conservation Home design/build competition, and promoted the resulting home; 4,000 architects, builders, planners, and other citizens toured the home during the three weeks before it was sold to a family of four.

Model Conservation Home

- In 1996 SPU co-sponsored the Sustainable Building Northwest Conference and Trade Show in Seattle, attended by 500 people from the region and the nation.
- King County and Seattle jointly published *The Contractors' Guide to Preventing Waste* and the *Recycling and Construction Recycling Directory,* which was distributed to over 3,000 companies.
- Seattle partnered with King County in the Green Works: Construction Works recognition program for businesses.
- Through the Business and Industry Recycling Venture (BIRV), Seattle prepared and distributed job site recycling case studies and provided information and technical assistance on how to reduce and recycle on the job site.
- SPU and Seattle City Light entered into a partnership for resource-efficient schools with the Seattle School District. A *Best Management Practices Handbook,* designed to set a standard for sustainable practices in school construction in the Puget Sound area, is about to be published.
- SPU chaired a Sustainable Building Task Force comprised of representatives from City departments, architects and construction contractors, the University of Washington, and other agencies.

The task force developed a Sustainable Building Action Plan for the City.[9]

- Through an Urban Consortium grant, the City and other jurisdictions, along with representatives of the design and construction industry will develop a sustainable building plan for the Pacific Northwest region.

WHAT ARE CURRENT NEEDS AND OPPORTUNITIES?

Market Development

Many market development opportunities reach well beyond the boundaries of the City and require regional coordination. In the future it will be important for the City to continue work with other market development agencies to refine roles and leverage resources. In the context of this Plan and our existing and future recycling program, the City's greatest market development needs are for:

- More organic materials composting capacity, including food waste composting facilities.
- More regional or local processing facilities and expanded uses for materials with weak or unstable markets, such as plastics and mixed low grade paper.
- Continued stimulation of consumer demand for recycled content products.
- Product testing of recycled-content construction materials to ensure quality and safety acceptable to designers and builders.

Product Stewardship

This is a relatively new issue for public agencies, and would be more effectively addressed on a regional than a city only basis. Alliances with other jurisdictions, non-profit organizations, and private sector interests are needed to map out and implement an integrated approach to promoting product stewardship.

Potential strategies include education for both consumers and producers, State legislation, and voluntary or mandatory programs where manufacturers or retailers take back particular materials or items. One priority might be materials which require special handling when discarded and which impose an extra burden on ratepayers. Draft Plan respondents have also suggested packaging, disposable diapers, electronics, and plant pots are likely items to take back.

Product Stewardship in Action

Seattle's Lab/Cor., Inc. sends out water testing kits in a durable plastic cooler, instead of a short-lived polystyrene cooler, and asks customers to re-use the cooler and packaging when they return the sample. The cooler can be re-used again and again.

❖ ❖ ❖

Interface Corp., based in Atlanta, used to sell carpeting. Now it sells the service of keeping customers' floors covered. The company is dedicated to meeting the "system conditions" of The Natural Step (see Chapter 3). Carpeting is made from recycled plastic, installed for easy removal without using toxic materials. Customers lease the carpeting; when a section gets worn, or they change decor or move to office space, they send the carpeting back to Interface for replacement.

❖ ❖ ❖

New TCO'95 standards for Green PCs ensure energy efficiency and ergonomics, and demand a low level of electromagnetic emissions from computer monitors. Equipment fully certified as TCO'95 can be returned for free when buying new equipment so the old components can be recycled.[10]

Sustainable Building

By common standards, Seattle is an economically healthy City. As described in Chapter 1, residential population is expanding into more multi-family dwellings. Employment continues to rise. New construction will continue to be part of this development. With the support of the construction industry, the City has a great opportunity to establish an ongoing commitment to sustainable building that will be a very tangible benefit to future generations in daily resource conservation and less exposure to indoor air pollution. To the extent that sustainable building reduces the long-term costs of operating a building, including reduced utility bills and landscape maintenance costs, sustainable practices can be more affordable for owners and building occupants.

Implementation of the Sustainable Building Action Plan will require an investment by both the City and the private sector. Specific recommendations include dissemination of technical information, code review to remove barriers, development of a resource center, incentives, and a marketing campaign to increase consumer demand.

As a particular focus, the City could encourage sustainable building in its low-income housing and economic development efforts, and create partnerships with lending institutions to give borrowers credit for selecting sustainable homes and businesses.

Closing the Loop on the Path to Sustainability

Goals

To "close the loop," the goals of this Plan are:

- ***To expand local markets and increase purchases of recycled content products.***
- ***To increase consumer and producer responsibility for sustainable waste management practices.***
- ***To implement the Seattle Sustainable Building Action Plan.***

Market development supports material recycling, which is important for current and future waste management. Some aspects of market development overlap with both product stewardship and sustainable building.

Product stewardship and sustainable building include waste reduction, recycling, and buying recycled elements. They "close the loop" and represent the materials management strategies of a truly sustainable future, when the concept of "waste" management will be anachronistic.

The three program areas are interconnected, and all three depend on

partnerships with other public and private sector interests to be truly effective.

Programs for the Future

The City hopes to leverage its investment in these programs by working closely with others seeking to achieve the same objectives.

- ***Expand buy-recycled outreach to all consumers.*** The City will expand its efforts to promote the purchase of recycled-content materials by both businesses and residents, and by designers and contractors of new construction.
- ***Create economic development incentives for local recyclables manufacturing and processing facilities.*** The City intends to encourage development of markets for materials that currently have weak or less stable markets in order to enhance the value of its recycling programs. Local market development is a high priority because closer markets mean fewer environmental impacts from transportation, and they also provide an opportunity for local economic development. This effort could be coordinated with local economic development initiatives.

  Prior to initiating this effort, SPU will evaluate which materials are highest priority and most suitable for this strategy, and will determine specific steps that could attract recycling-based manufacturers.
- ***Support the development of new organic materials processing capacity.*** As discussed in Chapters 6 and 7, new processing capacity for food waste and expanded processing capacity for yard waste is important to the continued benefit of curbside yard waste collection, and to achievement of recycling goals. Seattle's new collection requests for proposal will offer technical assistance incentives for new food waste facility development.

  SPU will continue to work with King County to seek ways to create incentives for development of food waste processing and for adequate yard waste processing capacity.
- ***Provide technical assistance and recycled product performance testing.*** An important goal of both market development and sustainable building is to increase the quantities of recycled-content construction material being used in Seattle. SPU will support the testing of new recycled-content construction materials and the development of specifications, and will provide technical assistance to designers and builders about the use of these materials.

- ***Promote product stewardship to both consumers and producers.*** Seattle will work with other local jurisdictions, non-profit organizations, and private industries to promote product stewardship. This includes participation in a new initiative, bringing local interests together to develop new product stewardship programs. Priority elements include public education – marketing the ethic of product stewardship to the public – and educating producers about how to become stewards and be successful in global markets that increasingly mandate product stewardship. Producer education includes such activities as training, case studies, and demonstration projects.

  The City will also pursue involvement with Puget Sound area information technology firms in developing a strategy for disassembly and de-manufacturing of electronic communications and computing equipment.

- ***Provide education and technical assistance on packaging reduction.*** Excess packaging is consistently mentioned by Seattle consumers as a priority for waste reduction. Encouraging consumers to select products with minimum packaging is a component of waste reduction education, but consumers can only choose from what is available. The City will encourage local manufacturers and retailers to reduce unnecessary packaging by providing examples and recognition.

  Ultimately, in a national and international economy, real progress can only be made at the federal level. The City will support national efforts to reduce non-returnable, disposable packaging.

- ***Promote increased voluntary take-back of selected wastes.*** SPU will promote existing take-back opportunities for products such as motor oil, household batteries, and paint. For other wastes – such as gas cylinders, fluorescent light bulbs, and selected household hazardous wastes – producers will be offered incentives and technical assistance to provide voluntary take-back programs.

- ***Support State legislation for product stewardship initiatives.*** The City will support the preparation and passage of State legislation that would encourage increased product stewardship, including recycled-content legislation, take-back requirements, or other initiatives.

- ***Implement Seattle's Sustainable Building Action Plan.*** The Action Plan includes nine specific recommendations. The City will partner with local design and construction interests to implement this Plan. As the Northwest Plan evolves it will probably contain similar recommendations. The City expects to participate in this regional plan, to ensure that the two plans are complementary, and to leverage available resources to promote sustainable building on a regional basis.

Endnotes

[1] Clean Washington Center, *Future Recycling*. Washington Department of Community, Trade, and Economic Development, 1996.

[2] Dr. John C. Rea, "Product Stewardship; A Basic for Industry/Government Partnership," *Journal of Public Sector Management*.

[3] John Travis, *Global Wellness Inventory*. Mill Valley, CA. Wellness Associates, 1990.

[4] National Science and Technology Council, *Preliminary Repor*t. 1993.

[5] *Worldwatch Paper No. 124*. Worldwatch Institute.

[6] City of Seattle, C*omprehensive Solid Waste Management Plan Survey*. Elway Research Inc., December 1995. This study had a 95% confidence level; i.e., it was very close to what results would have been if every Seattle household had been surveyed.

[7] *City of Seattle's Draft Solid Waste Plan: Summary of Questionnaire Responses*, Triangle Associates, July 1998. See also Appendix A.

[8] City of Seattle Solid Waste Utility, Local Hazardous Waste Program in King County. *Household Hazardous Waste Survey*. Elway Research, Inc., September 1994.

[9] City of Seattle, *Sustainable Building Action Plan: Recommendations to Promote Sustainable Design and Construction Efforts in the City of Seattle*. April 1998.

[10] Joe Rudich, "PC Landfills," *Puget Sound Computer User*. September 1997.

Chapter 9: The City's Own Solid Waste Practices

"It is not fair to ask of others what you are not willing to do yourself."

– Eleanor Roosevelt

Throughout this Plan, the discussion has focused on the various roles of residents, businesses, producers, and consumers in generating and reducing solid waste. Yet, what about the City of Seattle? While the City has the responsibility for planning and managing Seattle's solid waste, it is also a major generator. This chapter reviews what we in City government are doing to "walk our talk" and establish City government as a leader in waste reduction, recycling, and buying recycled.

The City is a major organization and, with more than 10,000 employees, is among the region's largest employers. It owns and operates more than 350 separate facilities – large and small – and approximately 8,000 acres of land within the City. As a major service entity, it purchases and ultimately disposes of things found in any typical office environment: durable goods such as furniture and computers, and operating supplies ranging from paper to cleaning supplies to light bulbs. The City pays to manage its garbage and recycling just like other businesses and institutions.

Garbage and recycling containers in Resource Planning, Seattle Public Utilities, Dexter Horton Building.

What about the City's Own Practices?

While the City's waste stream mirrors what would be found in any large business, it also has a number of special functions and facilities that have a major impact on the solid waste stream.

Some of these are listed below:

- Seattle Center events attract millions of people each year, generating thousands of tons of paper, food waste, and packaging. The Woodland Park Zoo, the Aquarium, and the City's many parks and community centers are also regional attractions whose thousands of visitors leave behind all sorts of garbage and recyclable materials that must be handled.
- Solvents, pesticides, and other potentially toxic materials are handled every day by many departments in the course of paving streets, managing landscapes, and maintaining buildings.
- The trees and landscaping in the City's parks, Seattle Center, rights of way, reservoirs, medians, and library yards produce thousands of tons of organic waste each year. Some of the green waste is chipped and/or mulched on site. However, the huge quantity of material generated during the growing season requires much of it to be transported off site to a composting site, landfill or other facility.
- The City's parks and road sides are all too commonly used for illegal dumping of waste which then becomes the City's responsibility. The City employs specialists to deal with hazardous wastes that are illegally dumped.
- The City's water and electric utilities repair and replace pipes, lines, and meters.
- The City has a fleet of more than 3,000 cars, trucks, and heavy equipment, with all of the associated tire changes, part replacements, oil changes, and other waste-generating maintenance.

Clearly, given the size and scope of these operations, the City can have a significant impact on the region's waste stream. As a public entity it is held to a higher standard with an obligation to lead by example in its policies and actions.

Carol Kelly, Seattle Police, Warrants Section (winner, 1994 Interoffice Recycling Award): "We have recycling bins in every cubicle; most warrants are printed on both sides of recycled paper. We buy exclusively 20% or more recycled-content paper."

T.B. Bartholomew of Seattle Police, Warrants Section: "We recycle all our computer printouts and our business cards are made from recycled paper. I even use the same coffee cup two days running!"

What Have We Achieved Since 1989?

The 1989 Plan, *On the Road to Recovery,* did not specifically discuss City operations. However, progress in solid waste management has been made in a number of areas:

Recycling

In 1998, all City offices have convenient recycling containers for office paper, glass, and aluminum. Most facilities allow mixed paper recycling (i.e., the user does not have to separate white paper from other paper). Because it is so "user friendly," the rate of paper recycling has increased.

In 1989, the City established a recycling coordinator position to manage recycling for the downtown office buildings, and in 1997 the City's major five office buildings recycled:

- 28.2 tons of corrugated cardboard
- 4.7 tons of glass and aluminum
- 319.4 tons of office paper

On average, 56.4% of the downtown office building waste stream was diverted to recycling. There is wide difference in recycling rates among the five buildings, from a high of 78% in the Arctic Building to a low of 43% in the Public Safety Building.

In 1997, Seattle Center recycled 28% of its waste stream. Public meeting and gathering spaces feature Slim Jim recycling containers. These give the public an opportunity to recycle, substantially reducing the Center's solid waste. In 1997, 85 tons of cans and bottles, 108 tons of cardboard and 137 tons of mixed paper were recycled. Approximately $27,000 of landfill fees were avoided by recycling, and the Center generated nearly $10,000 in revenue from recycled materials. The Center has also been successful in recycling wood waste from construction and theater projects. In 1997, 22 tons of wood waste were diverted from the landfill.

Seattle Parks and Recreation collects approximately 1,300 tons of garbage per year from the 4,000 litter cans in City parks. The cost to taxpayers for collection and disposal (not including the litter patrols) averages about $600,000 per year. While all Parks and Recreation community centers, public facilities, and offices have recycling containers for glass, office paper, and aluminum, the parks themselves do not. In 1992, Parks and Recreation conducted a pilot program to recycle glass and aluminum in public parks. While the program was popular with the public, costs exceeded the benefits and the program was abandoned. (An analysis of the waste stream from Parks and Recreation litter cans in 1992 found a minimal amount of recyclable glass and aluminum.)

Finally, in all departments, recycling is the primary waste management method for asphalt, tires, metals, motor oil, and antifreeze.

Green Waste

Seattle Parks and Recreation alone generates about 2,000 tons of organic waste a year, including prunings, stumps, weeds, grass clippings, and leaves. A substantial portion of the green waste is contaminated with other wastes, such as asphalt, rocks, and litter, which must be disposed of at one of the Recycling and Disposal stations. All City departments that manage landscapes – Parks, Seattle Center, City Light, Seattle Transportation (responsible for maintaining roadsides and rights of way), and Seattle Public Utilities – transfer an increasing amount of green waste to composting facilities. About 3,100 cubic yards of landscape waste is hauled 20 to 35 miles to

private recyclers and disposed of at a tipping fee of about $5/yard. These businesses chip or compost this material and resell it to the City and others.

Composting organic material on site instead of hauling was the goal of a joint effort by the Parks and Recreation Department and the Solid Waste Utility in 1995-1996. However, problems arose, including finding a site with adequate space, responding to community perceptions about odor, and complying with regulations to control leachates from a large composting site.

With the increased use of chippers in recent years, more green waste is being left on site as mulch which, in addition to reducing the amount of solid waste to be handled, also improves soil conditions and helps conserve water by reducing the rate of evaporation. The amount of grass clippings having to be composted or disposed of has also declined in recent years, because most City landscape crews report that they grasscycle (leaving the clippings on the lawn or turf) most of the time.

Buying Recycled

The City of Seattle established its Buy Recycled Program in 1992 with passage of an ordinance to increase procurement of re-usable products, recycled content products, and recyclable products by all departments. The program, which is now codified in the Seattle Municipal Code, establishes a 10% price preference for recycled-content goods and sets goals for purchases of recycled-content paper products, compost, and re-refined lubricating oil products.

The Purchasing Office in the Executive Services Department has lead responsibility for implementing the City's Buy Recycled program. Some of the 1996 accomplishments include:

- A 38% increase in spending on recycled-content paper products from the previous year.
- 89% of total motor oil purchased for vehicles maintained by the City garages was re-refined.
- An increase in the amount of compost purchased, from 5,800 yards in 1995 to 8,312 yards in 1996.

In addition, plastic park furniture, toner cartridges, insulation, and retread tires with recycled content are all purchased in greater quantity for City use.

Waste Reduction

A few initiatives have been undertaken to reduce and/or re-use resources:

- The legal profession is well known for using huge amounts of paper and office products. *The Paper Chase* is a Law Department

pilot project, started in late 1997, to reduce paper use by 15%. In 1996, the Law Department used more than 4,600 reams of paper in copiers and printers, or 2.2 million pieces. The attorneys and staff are being reminded to practice such simple techniques as double-sided copying and avoiding unnecessary printing. Results will be measured in mid-1998.

The advent of the City's In-Web page has made it far easier for City staff to take advantage of items surplused by other departments. For example, by accessing the Surplus Property Page, City staff can learn if another department has an excess supply of a needed pesticide, thereby avoiding the need to purchase more and the cost of storing and disposing of a hazardous material.

THE CITY'S OWN SOLID WASTE PRACTICES ON THE PATH TO SUSTAINABILITY

Goal

The goal of this Plan for the City's own solid waste practices is:

To improve sustainable waste management and resource conservation practices in all City operations.

To have credibility, the City must practice what it preaches, and develop internal programs that model ideal waste management programs.

Programs for the Future

The City plans to lead the way on the path to sustainability with a major effort to improve its own waste reduction, recycling, and purchase of recycled content products.

In 1997, the City launched a special project, the Environmental Management Initiative (EMI). Recognizing the City's potential to impact the environment through its daily operations, the Mayor and Council identified several goals for the project:

- Ensure that the City of Seattle incorporates a high level of environmental stewardship into its daily activities and complies with all regulations.
- Prepare an Environmental Management Program that establishes citywide environmental goals and policies, and provides a framework for improved management and accountability.
- Develop and implement a municipal conservation program to improve energy and water use in City facilities.
- Establish a process for measuring and reporting annually on environmental performance

To achieve these goals, the City has adopted an Environmental Management Program[1] which includes policies and performance objectives for waste reduction and recycling, landscape and grounds management, sustainable building, and environmentally responsible purchasing. Implementation of these policies and objectives will be facilitated by the Office of Environmental Management which will be established in January 1999.

Environmentally Responsible Purchasing

Plans are to substantially enhance the City's Buy Recycled program and increase procurement of re-usable products, recycled-content products, and recyclable products by all departments. The enhanced Buy Recycled program will include:

- Improved data collection, performance reporting, and tracking to better monitor and measure how well the City is doing, particularly in meeting the goals of purchasing recycled paper (60%), compost (60%), and motor oil (80%).
- Improved communication and education of both vendors and City staff. As staff learn of the availability of high quality recycled-content products, their use should increase.
- Expanded recycled-content products specifications (the City has standards for nine products while the federal government has 24).
- Improved enforcement of Municipal Code provisions requiring vendors, contractors, and consultants to use products that are reusable, recycled, or recyclable.
- Setting specific goals and a timeline for improvement and benchmark Seattle's performance with what others are doing.

Landscape and Grounds Management

The goal is to reduce the amount of waste generated at the City's open spaces that must be disposed of at commercial facilities. The benefits to the City and the environment are considerable including: fewer tipping fees, less fuel burned for truck hauling, and reduced cost of labor spent driving to and from disposal sites. To accomplish the goal of reducing the amount of waste to be disposed of, several actions are planned:

- Increased on-site chipping and mulch mowing to reduce the amount of green waste that must be hauled.
- Increased on-site composting. While the challenge remains of finding one or more suitable sites in the City for composting organic material, a more efficient option is becoming increasingly necessary. The commercial facilities are more and more restricted in how much green waste they can accept. Also, the City's costs are increasing for the labor, equipment (trucks), and fuel associated with driving each load a 40 - 50 mile round trip to the commercial facilities. Further,

by producing its own compost material, the City will avoid the cost of purchasing compost and mulch materials (about $40,000/year).

- Increased public education and outreach. As the City adopts practices that leave more organic material on site in City parks and other landscapes, for example by grasscycling, it will be important to keep communities informed of the reasons and benefits involved in these new approaches to landscape management. In addition, a public education effort is planned by the Parks and Recreation Department and Seattle Public Utilities to reduce the amount of waste left by the public in parks and other open spaces.

Waste Reduction and Recycling

While the City has been very successful in incorporating recycling into its daily business, it has been less successful in reducing the amount of material used in the first place – especially paper. The goal is to reduce paper purchases by the City. Planned actions include:

- Employee education. From street sweepers to department directors, all employees will be reminded about the direct and indirect costs of using paper. Campaigns will be undertaken to increase the use of double-sided copying and increase reliance on computers for communicating and storing information.
- Equipment purchases. When purchasing copying machines and printers, preference will be given to models that easily accommodate double-sided copies.
- Electronic billing. Thousands of utility bills are printed and mailed every year by City Light and Public Utilities to each and every City account. A substantial amount of paper will be conserved as the City converts to electronic billing.
- Maximizing recycling. Better oversight of the City's recycling program, and more outreach to employees will ensure maximum recycling in the office and in the field.

Sustainable Building

Foremost among the recommendations of the Sustainable Building Action Plan (see Chapter 8) is for the City to adopt a policy that would require all City of Seattle new construction and major renovation to be designed and built sustainably.

Performance Indicators

The adage "that which is measured is managed" is fundamental to the success of the Environmental Management Initiative. When the EMI is fully implemented in 1999, performance indicators will be in place to track the City's environmental performance in a number of key areas. Indicators will be selected that are relatively easy to measure and collect, easy to understand, have the potential for cost savings to the City and are broadly applicable across City departments.

Endnotes

[1] City of Seattle, *City of Seattle Environmental Management Program*, August 1998.

Chapter 10: Community Partnerships

"i/have known a solo self ... long enough to know that/we is the answer."

– Ntozake Shange

The previous five chapters have presented the wide array of past achievements and future program proposals for the substance of waste management – how we prevent or reduce waste, recycle materials, and manage the remaining garbage. Throughout, we've emphasized the importance Seattle Public Utilities (SPU) places on responding to citizen concerns and priorities. This chapter focuses on SPU's process for communicating and working directly with the people of Seattle, SPU's customers. Our connection with you – on the phone, by mail, in person – is where the rubber hits the road, where we make good on our commitments to the values of supporting healthy communities, providing accessible services, and responding to citizens.

The partnership between SPU and citizens includes finding out what people need to know and what they want, and then offering resources and information in a way that is accessible to all.

What Are Community Partnerships?

City staff communicate and work directly with Seattleites to help strengthen people's sense of community – of being part of a friendly, livable neighborhood in a progressive city that cares about all its citizens.

The success of Seattle's recycling programs has been partly due to SPU's community programs. People meet solid waste staff and volunteers in many different venues: on the phone if you call with a

question or to report litter or graffiti problems, at a festival booth if you stop by and talk to a volunteer, in the classroom, in your business if you want to know about how to recycle particular materials or organize a graffiti paint-out, and on the street if there is a problem with illegal dumping. SPU staff communicate with hundreds, sometimes thousands, of people every week.

Our community partnership programs are summarized below as a continuum from strictly one-way communication (for example, sending out printed information) to completely interactive communication (as when staff and volunteers work together with neighborhood groups on a cleanup project).

- **Information** - brochures, newsletters, advertisements giving facts about SPU services and encouragement to reduce/re-use/recycle (one-way communication from SPU).
- **Feedback** - surveys and focus groups where SPU asks for input on current or proposed policies and programs (two-way communication, mostly from citizens).
- **Education** - school curricula and community workshops offering resources for learning better waste management behavior and sharing ideas (may be one-way, two- way, and/or interactive communication).
- **Volunteers** - Friends of Recycling and other citizens who serve as auxiliary SPU staff, working directly with other citizens in cleanup and other neighborhood projects (interactive).
- **Neighborhood projects** - grants and technical assistance, bringing a more tailored and focused set of communication tools and assistance to individual neighborhoods. SPU encourages initiatives that can be sustained by the community with minimum governmental involvement and financial support (interactive).

What Have We Achieved Since 1989?

In Seattle's 1989 Plan, *On the Road to Recovery*, one of the seven goals was "to improve customer service and other community relations." Since 1989, the Solid Waste Utility – and now Seattle Public Utilities – has carried out a wide range of community partnership programs designed to encourage waste reduction, conservation, and safe, clean neighborhoods. These programs and their results are described below.

Information

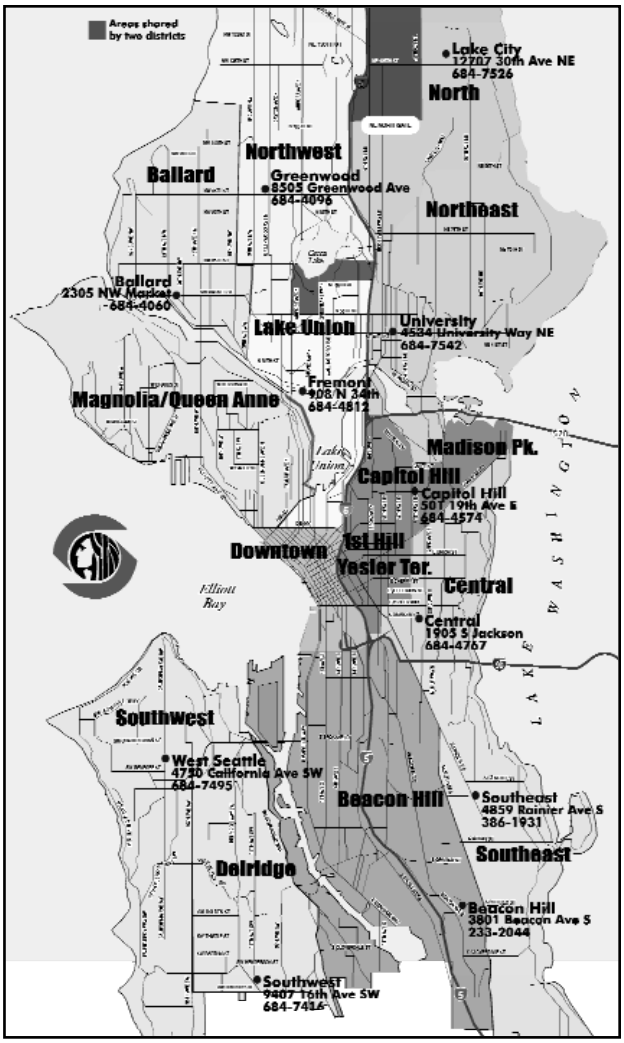
SPU's publications are designed to make sure all residents and businesses have the information they need to fully participate in Seattle's waste management programs. Informational materials include: bill

inserts and the *Curb Waste Times* newsletter; brochures and pamphlets addressing specific materials such as litter, non-toxic household cleaning, waste reduction, and what to put in the recycling; print and radio advertising; press releases; and the package of information issued to every new customer. Many materials are available in languages other than English.

Feedback

SPU has performed regular surveys about waste management practices programs. Some of these surveys are summarized in Appendix B. In evaluating current programs, or developing new or revised programs, SPU uses information from surveys about such things as back yard composting, general organic materials management, attitude to food waste separation and collection, business recycling participation, transfer station use, household hazardous waste, and multi-family recycling.

Though most Seattle citizens are pleased with SPU's services, many want opportunities to do more. Individuals, community groups, and neighborhoods often have particular ideas or concerns. Some people who live near transfer stations want more litter pick-up; some multi-family building residents want more recycling and composting opportunities; where graffiti is a problem, residents believe removal should be a higher priority.



Seattle is a city of many diverse neighborhoods.

This diversity of need was eloquently expressed during the 1995-96 community meetings that were part of the scoping process for this Plan (see Chapter 3). The South Park neighborhood council was very concerned with litter and illegal dumping in the vicinity of the transfer stations in their neighborhood. Jackson Place envisioned using neighborhood P-patches and traffic circles as composting sites for multi-family residents. At several community meetings people expressed a need for more recycling in multi-family buildings, and asked SPU to encourage manufacturers to reduce packaging.

In addition to citizen feedback, SPU monitors performance using studies of waste stream composition, recycling participation, and data about who throws what where. This information helps SPU track trends in waste reduction, recycling, and garbage and determine where we need to make changes in the future.

Education

SPU supports environmental education through a variety of programs focused on waste prevention, recycling, litter, and graffiti.

Students paint out graffiti.

Artist and Community Programs Team staff advise on the mural's progress.

A Seattleite adds fine brush strokes to a mural.

Activities include: classroom field trips, grant projects, assembly programs, all-school recycling campaigns, litter and graffiti clean ups, and partnerships between schools and neighborhoods.

SPU also educates residents through festival booths, community meetings, and events. Businesses receive education and technical assistance through the City-sponsored Business and Industry Recycling Venture (BIRV).

Volunteers and Neighborhood Projects

Seattle is based around its residential and business neighborhoods, which are often quite active. SPU helps people take care of their own neighborhoods, providing opportunities for creative involvement through schools and community centers, and on the streets. When neighbors come together to establish and participate in tool banks, re-use networks, graffiti paint-outs, or other community-based waste management projects, they develop a sense of community. Neighborhoods such as these are safer, more sustainable places – both environmentally and socially. The City's vision is to support neighborhoods in building and coalescing community pride.

To this end, SPU establishes and maintains community partnerships to reduce waste, re-use and recycle materials, and clean up litter and graffiti. Staff and volunteers focus on helping communities help themselves.

Programs to clean, maintain, and enhance school grounds, neighborhoods, and business districts include the Graffiti and Litter Matching Fund, and the Adopt-a-Street, Spring Clean, Home Cleanup, Anti-Graffiti, and Illegal Dumping programs.

Litter and Graffiti

Many of SPU's community programs address graffiti and litter. Not simply because they are unsightly, but because they begin a cycle that can turn a pleasant neighborhood into an unpleasant one. Graffiti and litter are less likely to occur in neighborhoods that do not already have graffiti and litter. A neighborhood that's tagged and littered sends the message that residents do not care for their neighborhood, that others need not care for it either. Illegal dumping in a vacant lot signals residents and others that it is okay to dump illegally in that lot. A few thoughtless acts by just a few persons can send this message. Since it is not the message most residents want to encourage, timely clean-up of graffiti, litter, and illegal dumping discourages future incidents. Each time residents, businesses, and SPU staff work together to prevent or remove graffiti, litter, and illegal dumping, we work together to make our neighborhoods safer.

Programs to help neighborhoods reduce, re-use, and recycle include Less is More and schools grants and Friends of Recycling volunteers.

Results

Information and Education

- Readers and market research respondents say the *Curb Waste Times* has helped them get the message of waste reduction, enlightened them as to methods and places that facilitate re-use, and helped them recycle better. Recycling and garbage collectors report improved sorting and set-out after the *Times* has been mailed.

- In 1996, SPU started a new *Curb Waste Times 2* for multi-family residents.
- In 1996 an estimated 19,000 students in 58 schools were involved in solid waste education activities initiated by SPU.
- Each year the Business and Industry Recycling Venture (BIRV) responds to 2,000 callers to its information line, assists up to 400 businesses through targeted outreach, and mails the quarterly *Recycletter* to 8,000 businesses.

Volunteers and Neighborhood Projects

- Seattle citizens reported graffiti was less of a problem in 1996 than in 1995. In 1997, 600 people volunteered to clean up litter and graffiti.
- In the first six months of 1997, 143 Adopt-a-Street groups were registered. During this period, 1,059 people volunteered a total of 2,284 hours to pick up trash, litter, and other debris on public streets in their community.
- Every year, approximately 15,000 Spring Clean program volunteers pick up 315 tons of garbage and 20 tons of green waste from public spaces.
- In 1997, the Home Cleanup program provided free disposal of 1,620 tons of waste.
- A new team of 100 multi-family Friends of Recycling has helped apartment residents recycle, with a special emphasis on not mixing nonrecyclable material with recyclables.
- Training programs and materials in other languages have also helped some multi-family communities understand our recycling programs better.

- The Seattle School District won an award from the Department of Ecology and Weyerhaeuser as the best recycling school district in the state, thanks to support from Seattle Public Utilities.
- In 1996 SPU's eco-team hired four teenagers and a supervisor for seven weeks in grounds improvement projects to demonstrate waste reduction techniques. The youth were hired through the Summer Youth Employment Program.

What Are Current Needs and Opportunities?

There is a continuing need to maintain a strong two-way dialogue with customers. Solid waste management activities like recycling and waste reduction require behavior change, and they involve daily decisions about what and how. Stopping anti-social activities like illegal dumping and littering means a significant change in attitude and behavior. Many people need constant reminders and reinforcement to maintain and support such long term behavior change.

If the City expands its programs – to collect new materials for recycling, do more waste reduction or market development – citizens will need to know how to participate, and SPU will need to understand people's responses so programs and messages can be refined.

Although SPU has taken a number of steps to provide information and assistance in various styles and presentations for diverse groups, current communication strategies are not effective for some customers. As ratepayer equity demands that all our customers have the same access to information about programs and resources, SPU needs to continuously improve the accessibility of programs to all citizens.

Volunteer participation has become a more and more important cornerstone of community activities. Friends of Recycling volunteers participate in graffiti paint-outs and Adopt-a-Street clean up efforts. Teachers volunteer their time to match schools grants. Volunteers are a very effective and cost-effective communication channel for SPU and Seattle's neighborhoods. The City could choose to leverage this resource by expanding its volunteer corps and involving volunteers in more activities.

Jetta Wallace, Community Programs Team member, shows young students the first principles of Waste Reduction.

Youth and children, of course, are our most precious citizens. Young people learn more quickly and are more open to new ideas. It's easier to teach them new behaviors than to change the attitudes and habits of adults. Today's young people will be the adults who are responsible for the future Sustainable Seattle. SPU could have a significant influence on the future by expanding or more effectively directing its community programs to youth, for example by allocating more resources to schools and other youth programs. Above

all, there are opportunities to enter into partnerships with local communities and neighborhoods to provide them with resources for neighborhood stewardship.

Neighborhood support could be expanded beyond litter, graffiti, and waste reduction grants to include all sorts of ideas neighbors have for doing local resource conservation projects. Ideas from the community meetings held in preparing this Plan included neighborhood tool banks, re-usable materials exchanges, neighborhood composting bins, special recycling containers, and grasscycling mowers shared among neighbors.

Community Partnerships on the Path to Sustainability

Goal

The community partnership goal of this Plan is:

To keep Seattle's neighborhoods clean and safe by partnering with communities.

This goal particularly relates to the litter, graffiti, and neighborhood cleanup programs such as illegal dumping and Adopt-a-Street. These programs are an extension of traditional solid waste services which help keep streets and neighborhoods clean and healthy by collecting garbage, and which encourage environmental awareness and conservation. In this case, the local environment that is being conserved is urban and the resource being conserved is community.

Beyond this, community partnerships are intended to support all the goals of this Plan. Education and outreach programs are designed to provide information and assistance about how to reduce wastes, recycle, and buy recycled. They are designed to explain to people how to use City services such as curbside collection and Household Hazardous Waste collection. They are designed to encourage citizen participation in sustainable practices for Seattle – not just with regard to material resources, but also human resources. Safe and healthy neighborhoods are part of what makes a Sustainable City.

Programs for the Future

Community programs focus on providing services and programs equitably to all ratepayers. This goes beyond the obvious meaning of service equity, as discussed in Chapter 7. SPU wants to make sure everyone is aware of and knows how to use its programs. This includes people who are new to the United States or who don't speak English very well. It includes people who feel alienated, shy, or who are are not used to being aggressive about getting what they want

from government. It includes children and the elderly – the whole spectrum of diverse populations that bring richness to our city.

The City plans to build on the success of current neighborhood and communication programs. Healthy neighborhoods are the foundation of sustainable community. Effective communication with SPU's customers is the foundation for all our programs.

Just as this Plan includes more support for individual responsibility by both consumers and producers for reducing wastes, so it includes strategies for helping Seattleites take ownership of their neighborhoods and becoming stewards of their local urban environment. Planned programs for increasing partnerships with the community are listed below:

- Expand outreach to under-served groups by developing new strategies for communicating with all ratepayers.
- Emphasize the message of conservation and stewardship in all educational activities, especially schools programs.
- Continue to provide resources to help people take action locally.
- Expand volunteer involvement in order to increase the number and quality of direct contacts with SPU programs, and create maximum access to available resources.
- Expand efforts to reach smaller and less organized groups and provide easier access to tools, funds, and assistance.
- Engage youth and children as neighborhood stewards.

Chapter 11: Programs for the Future

"If you cry 'forward' you must be sure to make clear the direction in which to go."

– Anton Chekov

This chapter begins by reviewing the process of preparing this Plan: the core values used as evaluation criteria, the extensive public participation that has helped shape the Plan, and the City's internal analysis and review process. The programs for the future listed in Chapters 5-10 are summarized in narrative and tabular form.

Preparing the Plan

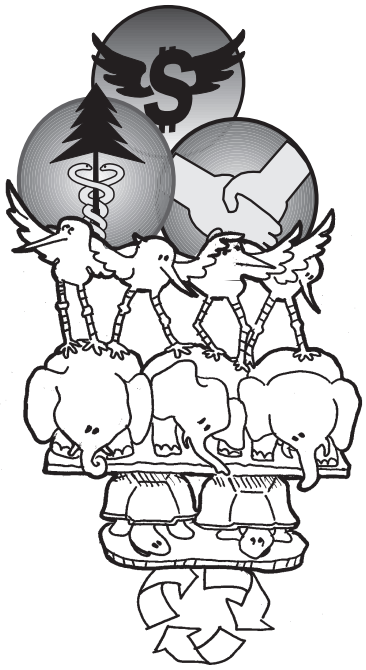
Evaluation Criteria

At the very beginning of the planning process, Seattle Public Utilities (SPU) staff defined core public values – derived from citizen feedback and adopted City policy – as the basis for all program improvements (see Chapter 4). These core values were the City's basic litmus test – or evaluation criteria – used to develop program options and select recommended programs. All program improvements in this Plan evolved from and support these core values, listed below.

Public and Environmental Health

All recommended improvements should:

- Fit the waste management priorities: waste reduction first, then recycling, and finally landfill disposal.
- Divert materials from the landfill.
- Reduce negative external impacts such as pollution from collection trucks and consumption of natural resources.
- Promote consumer and producer stewardship.
- Help maintain safe and clean streets and neighborhoods.
- Reduce worker and public exposure to hazardous materials.



Balancing Values to Create a Solid Waste Plan

Cost-effectiveness and System Efficiency

All recommended improvements should:

- Minimize rate impacts
- Provide present and future cost savings
- Represent innovative and feasible technology
- Support economic development
- Include shared costs and partnerships

Customer and Community Needs

All recommended improvements should:

- Have citizen support
- Provide equitable and accessible services
- Support the needs of neighborhood communities
- Respond to the needs of customers

Plan Development Process

Working Draft

In January 1998, SPU circulated a Working Draft of the Plan to representatives of a variety of stakeholder groups and solid waste experts from around the country. They were invited to review the wide array of potential new initiatives and optional strategies which had resulted from two years of extensive public involvement (see Chapter 3 and Appendix B).

Public Review Draft

Input from stakeholder and expert review of the Working Draft were used to prepare a Recommended Plan, which was published in a Public Review Draft in May 1998. The Public Review Draft identified two alternatives to the Recommended Plan:

- A Status Quo alternative where all current programs would remain unchanged.
- Modifications to the Recommended Plan by adding or removing specific initiatives.

Environmental impacts of the Recommended Plan and alternatives were analyzed in an accompanying Draft Environmental Impact Statement.

Recommended Alternative. The Recommended Alternative was similar to the adopted Plan. It included essentially the same goals and programs for waste reduction, community partnerships, and "closing the loop" efforts – market development, product stewardship, and sustainable building.

The City's Recycling Potential Assessment (RPA) computer model projected that recycling diversion under the Recommended Plan described in the Public Review Draft would reach an estimated 49% in 2010 without separate food waste collection or 53% if food waste collection were implemented. The model projected average annual costs of $51.2 million without food waste and $53.1 million with food waste collection (based on 20 year cost projections).

The Recommended Alternative assumed a continuation of education and incentives that would encourage voluntary participation. It proposed setting goals for multi-family and commercial sectors, and considering future mandates if goals were not achieved.

The Recommended Alternative contained specific strategies for improving the cost-effectiveness of the residential collection and transfer system: every-other-week collection citywide for recycling and yard waste, and commingled collection of recyclables. It also proposed a variable yard waste rate.

Status Quo Alternative. This alternative included current levels of effort for waste reduction and sustainable building programs, and a minimum involvement in market development. It included current curbside collection programs with no additions or changes (except service changes that would be inevitable as a result of new contracts). Status Quo programs were projected to achieve 47% recycling by 2010, with an average annual cost of $52 million.

Modifications to the Recommended Alternative. Several alternative programmatic options were discussed, but not recommended, in the Public Review Draft. Some modifications increased recycling participation and diversion, such as material bans or sign up requirements. Some rate modifications provided a greater economic incentive for waste reduction – such as garbage by weight, or a charge for recycling. SPU projected that modifications to the Recommended Plan could divert up to 70% of the City's waste to recycling. Average annual costs were not estimated.

Final Draft Plan

The Public Review Draft was revised based on comments received during the review process described in Chapter 3. Most comments reinforced the City's commitment to waste reduction and product stewardship, and encouraged a more aggressive approach to increasing recycling.

Responses to recommendations about new collection service levels for single family residents were mixed, although a majority of respondents supported the proposals in the Public Review Draft Plan. The Final Draft Plan did not include specific recommendations about collection services. Rather, it defined decision-making criteria for curbside collection services, and left the final decisions open for the new contract development and selection process. The most significant change between the Public Review Draft and the Final

Draft submitted to Council was a reassertion of the 60% recycling goal. It was also acknowledged that, while voluntary participation is preferred, mandates could be needed in the future.

The Mayor submitted the Final Draft Plan to the City Council for review and adoption. It was accompanied by a Final Environmental Impact Statement and an appendix detailing the response to the Public Review Draft and SPU's methodology for analyzing recycling potential and system alternatives. The Plan was adopted by City Council in August 1998.

The Adopted Plan

The adopted Plan describes the City's future agenda for solid waste management, representing a blend of program refinements and bold new initiatives. The City plans to maintain its 60% recycling goal while introducing major new initiatives in areas such as waste reduction, market development, and the City's own solid waste practices.

The Recycling Potential Assessment (RPA) model projects average annual costs of $ 49.2 million per year for the Plan (based on 20 year cost projections). This cost projection incorporates system efficiencies.

The specific programs to be implemented are summarized in Tables 11.1 - 11.6. The basic elements of this new solid waste agenda for Seattle are summarized below.

Maximum Waste Reduction

The City will make waste reduction a major program priority as part of an integrated campaign to increase our conservation of all resources – water, energy, and raw materials. Not producing waste is by far the cheapest and most environmentally responsible option for managing any waste stream. Waste reduction has long been the top priority in the widely accepted waste management hierarchy: first we want to reduce and re-use what we can, *then* recycle, *then* dispose of the rest. Some 94% of Seattle residents agree waste reduction is important. Now the City wants to make a stronger commitment to conserving our resources. We have been a leader in the recycling revolution, but now we have a new challenge: how can we reduce the total waste we generate, *both* recyclables *and* garbage.

Increased Market Development

The City will play a more active role in encouraging local recycling markets, with a focus on increasing consumer demand for recycled products, expanding local processing of food waste and yard waste, and supporting processors of recyclable materials with weak or unstable markets or materials that are currently recycled in distant markets.

Recycling 60% of Seattle's Waste

Current programs will be maintained, and new programs introduced, to keep Seattle moving aggressively towards its 60% recycling goal – to be achieved by 2008. The City will provide new services, such as food waste collection at the curb, and construction of a Recycling Center for self-haulers which will provide increased opportunities for recycling construction and demolition debris. Significant quantities of recyclable materials are still in the waste stream, and programs are in place to recycle them. Strong educational outreach and incentives will remain the primary strategy for promoting voluntary program participation. However, the City expects an equally strong response from citizens. If participation or diversion goals are not being achieved, SPU will propose mandates for sectors that are falling behind. Sector goals are: commercial (63%), single family (70%), multi-family (37%), and self-haul (39%). This is particularly the case for multi-family recycling, a sector which is failing to provide service to all residents. If participation does not increase significantly within the next two years, the City will require building owners to sign up for recycling.

Efficient Collection and Transfer

The City will improve the efficiency and convenience of waste collection and transfer operations. New collection contracts for all residential waste streams will begin in 2000 and contracts for commercial garbage collection are expected to be finalized soon. This will be an unprecedented opportunity to improve the overall collection and transfer system. The new contracts will probably involve some service changes for all customers. Opportunities to increase system efficiency include changes in collection services, changes in the flow of materials to transfer and/or processing endpoints, and more flexibility in selecting appropriate services for different sectors. Requests for Proposal for the new residential collection contracts will be designed to allow bidders to propose system options which will keep costs down while providing quality services.

Stewardship

The Plan focuses on increased consumer and producer responsibility in managing wastes. The City will introduce a new variable rate for yard waste collection, allowing residents to reduce their yard waste bill if they increase grasscycling or back yard composting. The City will also increase waste reduction outreach to residents, including specific tools to help individuals measure changes in their own waste generation. The City will work with producers to reduce packaging and begin voluntary take-back of selected wastes. Builders will be asked to incorporate new sustainable building practices. The City will take responsibility for modeling sustainable waste management and resource conservation practices in all its internal operations.

Partnerships and Volunteers

Finally, the City will build on successful programs from other agencies, groups, and businesses. The City will coordinate outreach programs with other local agencies and advocacy groups to combine resources and focus on consistent messages. Neighborhood groups and volunteers will be supported as stewards of their communities. The City will pursue partnerships with businesses to encourage more producer responsibility and increase local recycling processing capacity.

Table 11.1 The Path to Sustainability – Waste Reduction

Programs for the Future	
	Program focus: Waste reduction as the highest priority for a sustainable future.
Outreach and incentives for consumers	• Partner with other agencies and organizations to maximize the impacts of waste reduction and conservation messages. • Expand education, technical assistance, and grants to businesses. • Make paper waste reduction an outreach priority. • Offer strategies to measure individual waste reduction potential. • Focus on top commercial disposers. • Expand re-use promotion and opportunities. • Consider future feasibility of weight-based garbage rates.
Residential organic materials	• Continue to provide education and incentives for on-site organic materials management. • Establish a variable yard waste rate.

Table 11.2 The Path to Sustainability – Recycling

Programs for the Future	
	Program focus: Programs, education, and incentives to achieve 60% recycling. Contingent bans or mandates if goals are not achieved.
Recycling and yard waste collection programs	• Continue recycling and yard waste collection programs and rate incentives for single family and multi-family residents. • Distribute recycling containers to all single family residents. • Provide recycling collection at least every other week for all single family residents. • Add new materials to residential curbside collection. • Eliminate the rigid distinction between single family and multi-family in recycling collection. • Provide in-unit recycling containers or other incentives to multi-family tenants. • Evaluate the benefits of requiring space for garbage and recycling containers in new commercial and multi-family construction and remodeling. • Provide recycling collection to small businesses.
Recycling education and incentives	• Implement a vigorous campaign to encourage multi-family building owners to sign up for recycling, and mandate sign up if 80% of buildings are not signed up by 2000. Propose a two-tiered rate for multi-family garbage. • Implement major education campaigns to maximize recycling, especially of residential mixed paper and cardboard, and business mixed paper, plastic film, and clean wood waste. • Consider commercial garbage rate incentives to encourage recycling when new commercial contacts are in place. • Propose mandates or bans if recycling goals for commercial (65%), single family (70%), multi-family (37%), and/or self-haul (39%) are not being achieved.
Food waste recycling	• Add voluntary food waste collection to single family residents if feasible, based on collection contract negotiations and cost-benefit analysis of food waste management options. • Encourage development of food waste processing facilities in the region, and promote commercial food waste separation.
Self-haul recycling	• Build a recycle yard at the South Recycling and Disposal Station to collect construction and demolition debris and additional recyclable materials, and consider acquiring property near the North Station for expanded recycling. • Provide rate incentives to customers who use the South Recycling and Disposal Station.
Recycling in public places	• Provide more opportunities for recycling at Home Clean-up drop sites. • Provide recycling containers in public places.

Table 11.3 The Path to Sustainability – Closing the Loop

Programs for the Future	
	Program focus: Partnerships, education and incentives.
Market development	• Expand buy-recycled outreach to all consumers. • Create economic development incentives for local recyclables manufacturing and processing facilities. • Support development of new organic materials processing capacity for yard waste and food waste. • Provide technical assistance and recycled product performance testing.
Product stewardship	• Promote product stewardship to both consumers and producers • Provide education and technical assistance on packaging reduction. • Promote increased voluntary take-back of selected wastes. • Support State legislation for product stewardship initiatives.
Sustainable building	• Implement Seattle's Sustainable Building Action Plan.

Table 11.4 The Path to Sustainability – The City's Own Waste Management Practices

Programs for the Future	
	Program focus: Modeling excellence.
Waste reduction	• Convert to electronic billing. • Launch paper waste reduction campaign. • Establish purchasing preference for printers and copiers with double-sided copy feature. • Increase on-site chipping, grasscycling, and composting on City properties.
Recycling	• Increase employee recycling education and participation in internal City recycling programs.
Closing the loop	• Broaden the buy-recycled program to incorporate a wider range of environmentally responsible practices. • Implement sustainable building in City construction projects.

Table 11.5 The Path to Sustainability – Community Partnerships

Programs for the Future	
	Program focus: Community stewardship, reaching all citizens.
Communication and neighborhood improvements	• Expand outreach to under-served groups. • Expand outreach to smaller, less-organized groups. • Expand volunteer involvement. • Engage youth and children as neighborhood stewards. • Emphasize the message of conservation and stewardship in all educational activities, especially schools programs. • Provide resources to help people take action locally.

Table 11.6 The Path to Sustainability – The Collection and Transfer System

Programs for the Future	
	Program focus: Efficiency, customer service, and environmental protection.
Collection	• In new collection contracts, weigh cost, customer service, and environmental priorities in considering any change in recycling collection containers or collection frequencies for single family yard waste and recyclables. • Ban plastic bags from yard waste collection. • No change in single family garbage service. • No change in multi-family services. • Evaluate feasibility of every-other-week garbage collection in the future.
Transfer	• Support a flexible approach to selecting the most efficient transfer points for all materials, with some constraints on use of City stations. • Invest in capital improvements at the City Recycling and Disposal stations. • Manage Recycling and Disposal stations to minimize neighborhood impacts. • Establish environmental standards or performance criteria for organic materials processing facilities in evaluating new contract proposals.
Disposal	• Continue long haul landfill disposal. • Monitor closely the former Kent Highlands and Midway landfills.