

Strategy to Involve the Commercial, Industrial and Multifamily Sectors in Water Conservation

Prepared for Seattle Public Utilities
by
Watermark Communications
A World Institute for A Sustainable Humanity
Resource Management Associates
The RICE Group

May 2001

Table of Contents

TABLE OF CONTENTS	2
1. EXECUTIVE SUMMARY	4
1.1 CUSTOMER PRIORITIZATION AND MEASURE PACKAGING.....	4
1.2 PROGRAM DESIGN RECOMMENDATIONS.....	6
1.3 PARTNERSHIPS AND OUTREACH.....	6
1.4 VENDOR-DRIVEN RECRUITING.....	7
1.5 RECRUITING MAJOR CUSTOMERS.....	8
2. BACKGROUND & RESEARCH	10
2.1 CONTEXT.....	10
2.2 RESEARCH.....	12
2.3 BUSINESS ATTITUDES & MOTIVATORS.....	13
2.4 BENEFITS OF WATER CONSERVATION TO BUSINESSES.....	17
2.5 VENDORS.....	19
2.6 ASSOCIATIONS AND ORGANIZATIONS.....	19
2.7 SEATTLE PUBLIC UTILITIES.....	20
2.8 WATER CONSERVATION EFFORTS OF OTHERS.....	21
3. RECOMMENDATIONS FOR PACKAGING CONSERVATION MEASURES	24
3.1 BACKGROUND.....	24
3.2 METHODOLOGY.....	24
3.3 CLASSIFICATION OF CUSTOMERS.....	25
3.4 CRITERIA FOR PRIORITIZING WATER CONSERVATION MEASURES.....	28
3.5 IDENTIFICATION OF MEASURES.....	30
3.6 RECOMMENDATIONS FOR PACKAGING WATER CONSERVATION MEASURES.....	35
3.7 APPLICATION OF PRIORITY CRITERIA TO MEASURE PACKAGES.....	38
4. RECOMMENDATIONS FOR PROGRAM DESIGN	39
4.1 CUSTOMER PRIORITIZATION.....	39
4.2 SEGMENT SPECIFIC PACKAGES PRIORITIES.....	40
4.3 TARGETS AND PROJECTIONS FOR SAVINGS.....	43
4.4 INCENTIVE PROGRAM RECOMMENDATIONS.....	44
4.5 RECOMMENDATIONS FOR LONG-TERM DELIVERY MECHANISMS.....	46
4.6 RECOMMENDATIONS FOR SHORT -TERM DELIVERY MECHANISMS.....	49
4.7 MEASURE MARKETING OPTIONS.....	50
5. OUTREACH STRATEGIES TO RECRUIT BUSINESS PARTICIPATION	51
5.1 FRAMEWORK FOR OUTREACH: PARTNERSHIPS AND COORDINATION.....	51
5.2 CUSTOMER SERVICE MARKETING FROM THE WATER UTILITIES.....	57
5.3 OUTREACH AND RECRUITMENT STRATEGIES FOR SPECIFIC MARKET SEGMENTS.....	62
5.4 VENDOR-DRIVEN RECRUITMENT STRATEGIES.....	71
6. SUMMARY OF OUTREACH ACTIVITIES	79
6.1 STEPS TAKEN TO KICK OFF OUTREACH STRATEGIES.....	79
6.2 PARTNERSHIPS IN CONSERVATION OUTREACH FOR THE COMMERCIAL / INDUSTRIAL SECTOR.....	79
6.3 PUBLIC SECTOR MANAGERS WATER MANAGEMENT WORKSHOP.....	89
6.4 PARTNERSHIP DEVELOPMENT WITH PUGET SOUND ENERGY.....	91
6.5 ON-SITE CONSULTATIONS.....	94

6.6 OUTREACH MATERIALS	99
6.7 PUBLICITY AND MARKETING.....	101
7. REFERENCES	103

1. Executive Summary

A recent study by economics professors in the Northwest found that the percentage of businesses and other organizations in Washington actively engaged in voluntary resource efficiency efforts is at or below six percent of the total firms. This indicates that many opportunities exist for water utilities to actively engage their commercial and industrial customers in water conservation.

The consultant team hired by Seattle Public Utilities (SPU) has conducted research and developed recommendations and strategies for water utilities to recruit business and commercial participation in the 1% Water Conservation Program throughout SPU regional customer service areas (this refers to the coverage areas of SPU and local water utilities).

1.1 Customer Prioritization and Measure Packaging

This consultant team has made specific recommendations on which customer segments and conservation measures to target in order to achieve water savings while optimizing administrative and incentive investments by utilities. A key recommendation is to focus on the eight customer segments with high water use. The strategy provides a programmatic design tool that utilities can use to tailor their own program to meet the 1% Water Conservation goals.

1. Hospitality, Entertainment, Recreation & Religious

High-Priority Packages

- Toilet and Urinal Replacement (Restaurant and Entertainment, Athletic Clubs)
- High-Efficiency Washers
- Cooling Tower Improvements
- Replace Single-Pass Ice Machines
- Recycle Laundry Water

Priority Packages

- Toilets and Urinal Replacement (Hotels and Motels)
- Irrigation Performance Improvements
- Retrofit Other Single-Pass Uses (Restaurant and Entertainment)

2. Education

High-Priority Packages

- Toilet and Urinal Replacement
- High-Efficiency Washers
- Irrigation Performance Improvements
- Retrofit Other Single-Pass Uses

Priority Packages

- Cooling Tower Improvements
- Replacement of Single-Pass Ice Machines
- Recycle Laundry Water

3. Parks, Golf Courses & Cemeteries

High-Priority Packages

- Irrigation Performance Improvements
- Toilet and Urinal Replacement (Golf Courses)

Priority Packages

- Toilet and Urinal Replacement (Parks and Cemeteries)

4. Transportation, Warehousing, Communication & Utilities

High-Priority Packages

- Toilet and Urinal Replacement (Ports and Airports)
- Irrigation Performance Improvements

Priority

- Cooling Tower Improvements
- Recycled Process Water

5. Multifamily & Coin-op Laundry

High-Priority

- High-Efficiency Washers
- Irrigation Performance Improvements

Priority

- Toilet and Urinal Replacement

6. Health & Human Services

High-Priority

- Cooling Tower Performance Improvements
- Retrofit Other Single-Pass Uses
- Recycle Laundry Water

Priority

- Toilet and Urinal Replacement
- High-Efficiency Washers
- Irrigation Performance Improvements

7. Offices & General Commercial

Priority

- Toilet and Urinal Replacement
- Irrigation Performance Improvements
- Cooling Tower Performance Improvements
- Replace Single-Pass Ice Machines
- Retrofit Other Single-Pass Uses

8. Manufacturing and Processing (food & non-food)

High-Priority

- High-Efficiency Washers
- Cooling Tower Performance Improvements
- Replace Single-Pass Ice Machines
- Process Water Control
- Process Water Recycling

Priority

- Retrofit Other Single-Pass Uses
- Toilet and Urinal Replacement

1.2 Program Design Recommendations

Both the long- and short-term delivery recommendations involve:

1. Developing **partnerships** with other agencies, associations, vendors and businesses.
2. Developing an efficient **vendor-driven promotion** and fulfillment system for industry standard improvements.
3. Developing long-term client relationships with **major public, private and non-profit customers** and obtaining long-term commitments to conservation.
4. Promoting **market transformation** through support of innovative water conserving technologies in key areas.

1.3 Partnerships and Outreach

Specific elements of this strategy include developing a "*framework*" for outreach and establishing relationships and/or partnerships with government agencies, energy utilities, associations and others who can help water utilities leverage resources and achieve water savings goals. Important reasons for identifying and developing partnerships include:

- Other organizations as delivery vehicles.
- Publicity through partners.
- Recruit partners for steering committee.
- Clear and timely communications with local water utilities.
- Local awards.
- Identify in-kind resources and services.
- Partners lend name recognition.

For major customers, it is recommended that water utilities train staff or hire consultants to service as marketing representatives or "account executives" to ensure personal contact and timely, consistent follow-up with customers. Ideally, this should take the form of a sales and marketing team, whose members are assigned specific clients for marketing and tailoring conservation programs to fit client needs.

Successful marketing will also employing the following additional strategies:

Publicity

- Media
- Newsletters

- Utility newsletters and bill inserts
- Award programs

Peer education

- Outreach to associations
- Education through partner organizations

Educational and resource materials

- Technical fact sheets
- Case studies
- Web-based information
- Marketing brochure
- Poster for employees and management
- Resource guide

1.4 Vendor-Driven Recruiting

Strong cooperative relationships with vendors are key to operation of a cost-effective, successful water conservation program. It is essential that, to the extent possible, this relationship be one that provides a clear incentive to motivate vendors to take initiative in promoting the program, as well as one which offers attractive enough terms to be easily marketed to their customers.

Listed below are several packages of water conservation measures that lend themselves well to delivery through vendors.

1. Domestic Plumbing Retrofits

Continue to offer fixed incentives for toilets and urinals, but with no minimum requirement regarding flushes per day.

2. Cooling Tower Improvements

Offer fixed incentives of \$500 per conductivity controller installed for sump makeup water in existing cooling towers where there was either no conductivity controller or a malfunctioning controller. Pursue cooperative agreements with energy utilities for additional funding of efficiency improvements.

3. Single-Pass HVAC and Medical/Dental Equipment Replacement/Retrofit

Continue to offer variable incentives for replacement or retrofit of single pass equipment.

4. Single-Pass Ice Machine & Cooler Replacement/Retrofit

Continue to offer variable incentives for replacement or retrofit of single-pass ice machines and coolers.

5. Irrigation Improvements

Continue to offer variable incentives for irrigation improvements.

6. Multifamily/Laundromat Coin-op High-Efficiency Washers

Offer fixed incentives for purchase of high-efficiency for coin-op common area laundry facilities at multifamily housing and laundromats. Qualifying applications may be for both new locations and as replacements for existing low efficiency machines.

7. Process-Water Control/Recycle

Continue to offer variable incentives for process water control and on-site process water recycling.

1.5 Recruiting Major Customers

The first recommendation in recruiting customer participation is to develop long-term relationships with major customers. A process template for establishing relationships is outlined and the consultant team suggests that each year, SPU identify six to eight large customers to work with very intensively, in order to develop long-term relationships. Local water utilities should identify as least one customer in their service area to work with each year.

Customer Segment Strategies

1. Hospitality, Entertainment, Recreation & Religious

Provide free on-site water use audits to identify opportunities. Primary focus will be on domestic plumbing and single-pass ice machines. Secondary focus will be on cooling tower conductivity controllers and laundry water ozone and/or recycle systems. Hotel facilities will also be encouraged to offer guests the option of laundering sheets less than daily.

2. Education

Approach educational institutions at the administration level for support and commitment to incorporate 1% Water Conservation goals into district or campus operational plans. Schools and higher education institutions operate on a biannual cycle to match the state funding allocations. Cycle program offerings to target the last year of the biennial budget cycle in order for customers to expend unused capital funds on water efficiency projects and carry forward to the new biennial cycle.

3. Parks Golf Courses & Cemeteries

Provide free on-site irrigation audits to identify opportunities.

4. Transportation, Warehousing, Communications & Utilities

Gain adoption of 1% Water Conservation elements into operational goals by governing commissions. Incorporate water conservation into commission (i.e., Seattle Port Commission) agendas as an “efficiency in government” planning approach.

5. Multifamily and Coin-op Laundry

Help property management companies install submetering systems. Submetering companies cite figures that water consumption drops from 25 to 40 percent after residents start paying for water and sewer costs directly. Property management companies usually see a payback within 18 months after installation, depending on local rates.

Form a joint effort with county and utility programs targeting housing authorities for retrofits and new construction. Local energy utilities and housing authorities have energy conservation programs in place to reduce low-income housing costs. These programs have outreach workers who develop energy conservation packages for housing authorities. Partner with these groups and training program staff in water auditing and assessing for conservation opportunities.

6. Health & Human Services

Provide free on-site water use audits to identify opportunities. Primary focus will be on domestic plumbing, single-pass ice machines, water-cooled vacuum pumps, and autoclaves. Secondary focus will be on cooling-tower conductivity controllers, laundry facilities and irrigation improvements.

7. Office and General Commercial

Coordinate conservation delivery and marketing with other utilities and approach large commercial clients with a comprehensive package of conservation measures that has a significant and broad application.

8. Manufacturing and Process

Provide free on-site water use audits to identify opportunities. Primary focus will be on process water control and recycling. Secondary focus will be on cooling tower conductivity controllers, domestic plumbing, and miscellaneous single pass use.

2. Background & Research

In March 2000, Seattle Public Utilities (SPU) hired a team of four consultants to develop strategies to package and deliver water conservation measures and recommend methods of outreach to recruit commercial and industrial sector participation in their 1% Water Conservation. Watermark Communications served as project manager for the contract. Other consultants were The RICE Group, Resource Management Associates and A World Institute for a Sustainable Humanity. SPU formed a work group comprised of staff from SPU and the Highline and Bellevue water utilities to support, guide and oversee the consultant team's work. The work group met monthly to discuss and review progress.

2.1 CONTEXT

The 1% Water Conservation commercial/industrial program expands SPU's existing water conservation programs and the research and development of new programs identified as cost-effective in the Conservation Potential Assessment (CPA). Over a third of the savings potential of the 1% Water Conservation program is related to the commercial sector. Since 1994, SPU has had three ongoing incentive programs targeted to the commercial/industrial sector – the Commercial Toilet Rebate Program, the Commercial Landscape Program and the WaterSmart Technology Program. While these programs have met with varying degrees of success, they have only reached a small percentage of SPU's commercial/industrial customer base. Under the 1% Water Conservation program, SPU and local water utilities that purchase water from SPU want to expand these program efforts and place more emphasis on increasing customer participation and outreach. For the purposes of this report, the coverage areas of SPU and local water utilities are referred to as the "SPU regional customer service areas."

Efforts to reduce water use in the Seattle area are not new. SPU's 1993 Water Supply Plan forecast correctly predicted that water demand would decline during the 1990s due to the impact of programmatic, plumbing code and rate-induced conservation. After the 1992 drought, conservation and higher water rates combined to slow the growth in purveyor demand by more than what was forecasted. Since the 1992 drought, the combined effects of higher water rates, conservation and improved system operations have kept both billed and total consumption significantly below pre-drought levels.

The current water demand forecast for Seattle and its existing wholesale customers was produced in 1999 and projects significantly less demand than either the 1993 Water Supply Plan forecast, or the more recent 1997 forecast. Due to the 1% Water Conservation program, total water demand is projected to actually decline slightly in the next 10 years from 149 mgd (million gallons per day) in 1999 to 144 mgd in 2010. The near-term outlook for water supply in the SPU regional customer service area is good, but as the region continues to grow, adding new residents and businesses, the demand for water during peak seasons could exceed availability in the future.

The highest daily water use in 2000 was 241 million gallons in August (the highest historic peak day water use was 348 million gallons in 1987). A one percent reduction during this peak season would amount to 2.4 million gallons per day. Water savings from the commercial/industrial sector will make up approximately one-third of the total reduction, or about 1.6 million gallons per day during the peak season.

This strategy is intended mainly to guide water utility staff on how to package and prioritize water conservation measures, prioritize customer segments and carry out the recommended delivery

strategies and increase commercial and industrial participation in 1% Water Conservation. The consultants have focused extensively on areas of concern identified by SPU and the approaches and strategies proposed are based in large part on information gathered from customers and public and private organizations and associations.

The recommended strategies in this report can, over the long term, result in sustained attitude changes in the commercial and industrial sector and support efforts of local water utilities to meet the goals of 1% Water Conservation in their districts.

The specific objectives of the consultants were to:

- Research and evaluate water conservation measures and approaches
- Research and evaluate customer perceptions and receptiveness to water conservation.
 - ◇ Gather information about commercial/industrial sectors within the SPU regional customer service areas.
 - ◇ Gather information about ongoing conservation programs and efforts being implemented by other utilities, organizations and customers.
- Package water conservation measures
 - ◇ Identify and prioritize appropriate water conservation measures for each commercial sector group.
 - ◇ Identify and prioritize customers and sector groups.
- Develop program design strategies
 - ◇ Identify opportunities for coordination and partnership with other utilities and organizations.
 - ◇ Recommend near- and long-term strategies for program delivery within the SPU regional customer service areas.
- Outreach and recruitment
 - ◇ Research and evaluation
 - ◇ Develop outreach and recruitment plan
 - ◇ Conduct a workshop for customers
 - ◇ Develop partnerships with other public and private utilities and organizations
 - ◇ Conduct on-site consultations with large customers
 - ◇ Develop fact sheets, restructure SPU's web site and design and write a program brochure

In October 2000, the consultants presented recommendations for packaging and delivering water conservation measures to the commercial / industrial sectors and in December 2000 the outreach and recruitment plan was submitted to the SPU work group. The recommendations contained in those documents, as well as reports on the consultants' research, are combined in this report and presented as the "Strategy to Involve the Commercial, Industrial and Multifamily Sector in Water Conservation."

2.2 RESEARCH

In developing recommendations and strategies for involving business customers in water conservation, the consultant team researched and evaluated information from SPU, local water purveyors, customers, associations, vendors and others. Commercial and industrial customers from the SPU regional customer service areas were given the opportunity to provide input on water conservation through focus groups and interviews. A number of vendors and relevant organizations also were interviewed to determine their involvement in and solicit suggestions for water conservation. All in all, the consultant team gathered information from a mix of nearly 50 commercial / industrial customers, vendors, associations and Seattle Public Utilities (SPU) staff.

In addition, SPU commissioned a survey of business customers in its service area to establish baseline attitudes toward conservation.

The packaging and delivery recommendations in this report build on the Conservation Potential Assessment, the potential savings and targets identified by Seattle Public Utilities, and previous research, including a report prepared by Dethman Associates. The recommendations were guided by information obtained from the consultant team's research and consultations with numerous outside sources, including commercial/industrial customers and purveyors.

To ensure the recommendations developed for packaging and delivering water conservation measures, the consultant team conducted a significant amount of upfront research, involving local and out-of-state water providers, commercial and industrial customers, vendors and others. In addition, the consultant team also reviewed and analyzed the Conservation Potential Assessment, prepared by Seattle Public Utilities, and other information provided by SPU. This research guided the consultant team's work, and the recommendations contained in this report were developed based largely on our research.

Most of the work in developing the recommendations for packaging and delivering water conservation to the commercial/industrial sector involved research and data collection. Information was obtained from staff at Seattle Public Utilities, local water utilities that purchase water from SPU, and from utilities in other states. Data was also collected from a number of reports produced by Seattle Public Utilities and others.

To determine the best methods for outreach and recruitment the consultant team conducted focus groups with business customers. A number of public and private organizations and associations (including utilities) were interviewed to identify opportunities for collaboration and solicit suggestions for outreach to the commercial/industrial sector.

Research and data collection included:

- Obtained and analyzed customer information from SPU and local water utilities to:
 - ◊ Identify largest water users and uses.
 - ◊ Identify customer and sector classifications.
 - ◊ Develop a database of key contacts.
- Reviewed new sector/customer code breakouts from Seattle Public Utilities and identified highest water consumers from this data.
- Collected and reviewed previous research and reports, including the Conservation Potential Assessment (CPA) and a Dethman Associates report on the commercial/industrial sector.
- Researched how other water utilities, both in- and out-of-state, are working with commercial and industrial customers on water conservation.

- Developed and distributed a questionnaire to purveyors to determine what they are doing and where they could use help to deliver water conservation to their commercial and industrial customers.
- Interviewed vendors, associations and utilities for information and suggestions on water conservation.
- Conducted five focus groups with business, government and industrial customers to evaluate their perceptions and motivations regarding water conservation.

2.3 Business Attitudes & Motivators

Between July and October 2000, the consultant team conducted five focus groups and several interviews with commercial/industrial customers to identify influences on decisions related to water use and conservation. Details of the focus groups and interviews can be found in the appendices. Following are highlights of customer perceptions related to water conservation.

Top Attention-Getters for Commercial / Industrial Customers

- The purchase of water is not expensive, but getting rid of it is.
- Acceptable payback times ranged from one to three years, generally.
- There is a high level of interest in site visits from the utilities and in recommendations on how to conserve water and save money, as well as follow-up information and resources to get the job done.

Motivators and Influences

- For customers, decisions on how much water to use are secondary to almost everything else. The bottom line for most customers is profitability.
- Purchase of water is not expensive, but getting rid of it is. When customers use less water, they discharge less water and pay less for disposal.
- Client expectations influence water decisions (for good water pressure, nice looking parks and lawns for example).
- Customers' motivators for water conservation: desire to be a good corporate citizen and step up to the plate to help preserve natural resources.

Financial Considerations

- Payback times ranged from one to three years, generally. If other benefits, such as public relations, can be shown, some businesses might consider a four- or five-year payback.
- Customers need to know a project will have a measurable impact and where the savings will occur.
- Incentives are important, but only if makes a project cost-effective.
- In some companies, no one is paying attention to water conservation and for them, it doesn't matter how good the incentive program is. People get used to paying a bill and just keep on paying it.
- Cash incentives and cost sharing are the most effective for customers.
- Vendors had little knowledge of water conservation and incentive programs.

Concerns & Needs

- Water conservation measures need to allow customers to continue to meet important needs, such as water pressure. Alternative sources of water need to be clean enough to discharge to bay or river.
- Codes are important when it comes to planning new facilities or upgrading old facilities.
- Training and a lack of understanding among staff and management are big obstacles. Some customers requested staff training – perhaps in cooperation with other entities.
- The best thing is expertise, technical assistance. Getting systems audited is helpful. Facility assessments are very popular with Seattle City Light clients. A critical aspect of its success is program follow-up by staff. Without follow-up by program staff, there isn't sufficient motivation for customers to take action.
- Business customers felt that direct contact from utility representatives is the best way to recruit commercial and industrial participants for water conservation programs.
- There is a high level of interest in site visits from the utilities and in recommendations on how to conserve water and save money, as well as follow-up information on resources to get the job done.

Outreach and Education

- Businesses were not clear about the goal of water conservation: use less water overall, or just use less city water; and some said they need to be convinced that a problem exists.
- Brochures and publications, such as fact sheets, are useful to customers, but only in conjunction with a site visit.
- There is a need for more "how-to" information on water conservation and more case studies on how other businesses have achieved water savings.
- The Internet is not a highly useful tool for reaching business customers, however consultants and contractors hired by the businesses might use the web.
- Vendors, consultants (engineers, architects, etc.) are sources of information for business customers (although vendors do not generally provide information on water conservation and sometimes lack credibility because they may be pushing a product). Generally, businesses trust people they hire. Businesses also get information from trade shows, where vendors and consultants are, and from their associations. Associations are highly trusted.
- There needs to be more crossover between residential education and workplace education on water conservation, because many employees and managers who see TV or newspapers ads at home don't transfer that information to their workplace.
- Businesses consider their water utility bill as a top source of information and would like to see better information on their water use history as well as indications of whether they are meeting 1% Water Conservation goals. While some valued the inserted information with the bill, it was clear that the inserts don't always make it past the financial department and to the facility managers.
- Customers are interested in workshops, especially where they can be held as part of an existing event, such as a conference or an association meeting.

Commercial Customer Survey - February 2000

In January and February 2001, a consultant conducted a telephone survey with 143 SPU and purveyor non-residential customers. This survey was conducted as part of an evaluation of the utilities' Water Smart Technology program, a conservation program directed at non-residential

customers, for 2001. Its primary use will be to compare its results with a follow-up survey, to be conducted in 2002, that will help measure how well the program is doing to build program awareness and to spur conservation actions. An Interim Report, on file with SPU evaluators, contains a more thorough examination of the sample and methods, the questionnaire, the data file, and two sets of frequency data tables.

Upon review of the survey, some of the findings and results appear to be in conflict with the consultant team's research in two areas. The first is outreach approach, and whether or not companies are receptive to "in-person" utility contact for program marketing. The second is motivation to enlist or engage water conservation activities.

On the first issue, the focus group findings indicated that companies were receptive to and encouraging of utilities providing in-person contact. In fact, they viewed this contact as important to establishing trust and value to the utility information. This was in contrast to the statement in the SBW report that indicated that only a small portion of the respondents wanted in-person contact from the utilities.

On the second issue, the Focus Group findings were that businesses were bottom line oriented. If the cost / benefit was in their favor, they would be interested in water conservation. The commercial survey indicated that most of the businesses surveyed were interested in water conservation for environmental reasons and few were motivated by financial arguments or incentives.

The crux the apparent differences are in the sampling methods, the demographics of the respondents, and the purposes of the instruments (focus group vs survey). This requires a closer look at the information and summaries. The focus groups were a small sample from a specific customer group (large commercial / industrial users). The questions explored by the focus groups were aimed at getting information for marketing, such as who or what are considered reliable sources of information. The commercial survey interviewed 143 company managers from the full range of small to large customers. It's goal was to understand the company's knowledge and involvement with water conservation as a baseline to follow-up studies. While each of these activities had different purposes, there were crossover issues that surfaced.

Preliminary Program Design Insights Provided by the Survey

Decisions about water use are controlled by a small number of people within organizations – mostly those in upper management and facilities management. This relatively small group of individuals will be important to reach in marketing this program and ensuring its success. The program would benefit from developing a targeted list of individuals who are in charge of making water use decisions and communicating directly with them on a consistent basis through a variety of communication avenues.

Preliminary excursions into the data beyond basic frequencies suggest that the non-residential market would benefit from further segmentation into smaller, better defined target markets or market niches, each with its own description and plans for marketing and outreach. It would take further analysis to determine what these target markets should be based on – e.g., size of consumption, type of ownership, type of business, level of motivation, potential areas for saving. The data in this survey offer the potential for this type of analysis and, if possible, such analysis should be pursued. (This type of analysis is beyond the evaluation scope.) It would be useful for program staff, evaluators, and program marketers to collectively determine how to make the best use of some rich data.

As an example, cross-tabulations by water use strata (amount of consumption) suggest significant differences among groups. Almost half (45%) of very large customers have been involved with Water Smart Technology, compared to 17% of large customers and less than 5% of small and

medium customers. Thus, the program has effectively attracted and served the largest customers, but it may not be equally well situated to attract other sizes of customers.

Other cross-tabulations with size of consumption suggest that the level of consumption significantly affects a variety of organizational characteristics and perceptions. For instance, among very large and larger customers, “saving money” was the most important motivation to save water; among small and medium size customers, saving the environment was chosen much more often.

Of course, it is a strategic decision as to how broad the base of customers should be for this program and in what order should customers be pursued. But whether the goal is a broader customer base, or the “biggest bang for the buck,” the strategy should be clear.

At this point, the data show that awareness of the Water Smart Technology is low but that top-of-mind interest in the program is positive and that the conservation “ethic” is at least given lip service in non-residential organizations. However, many customers may not be aware of all that they can do to save water, as evidenced 47% believing there is “nothing more they can do,” and that only 14% of respondents thought they could cut their use by more than 5%. If their perceptions are true, it will be difficult to meet the 1% Conservation goals over the long run. However, through a targeted marketing program, that identifies the needs and preferences of market segments, and that both addresses technology fixes, and behavioral changes (e.g. 40% of large customers say that their lack of control of water users is a major barrier to conserving), success will be more likely.

Water Use Highlights

- Respondents reported that their largest uses of water are for restrooms, indoor cleaning, and outdoor cleaning (based upon combining the percents for the largest, second largest, and third largest uses).
- Almost half of respondents (46%) said they had taken steps to save water on their largest use; this drops to 24% for the second largest use and 16% for the third largest use.
- Of those who took action to save water for their largest use, 12% reported their water utility had, in some way, helped them achieve the savings. (Only 6% said they had participated in a “formal” utility conservation program.)
- A small proportion – 8% – said they plan to take steps to save water with their largest use in the next year.
- Water and waste water costs are small expenses for most organizations: 76% of respondents said they spend 5% or less of their overall costs on water and wastewater and over half of this group said the costs are less than 1% of their overall costs.

Attitudinal Highlights

- Over half of respondents (54%) think commercial customers can greatly affect whether we have enough water in the future.
- Just over half of respondents (51%) think it’s very important for their organization to save water.
- However, 45% of respondents say their organizations cannot save any more water; 36% say they can save 1-5%, and 14% say they can save more than 5%.
- Two-thirds of respondents report their upper management is very aware of water costs and use (even though most also say it’s a small proportion of costs).
- About half of respondents said “saving the “environment” would be the most powerful motivator for their organizations to save water, followed by saving money (28%). Delaying the cost of new supply and saving salmon were much less salient motivators.

Awareness of and Interest in Utility Programs

- Less than one in ten respondents (9%) report they had heard of the 1% Water Conservation effort.
- About a quarter (24%) said they had heard about utility sponsored water conservation programs for commercial customers. However, only 5% of this group spontaneously knew the name of the program.
- Sixty percent of respondents were very (29%) or somewhat interested (31%) in knowing more about the Water Smart Technology Program. Less than 1% said had specific projects in mind; most wanted information about how they could save the environment or save money through water saving efforts. Those who didn't want to learn about the program most often said they had "nothing to do."
- Consistent with the 45% that said they couldn't save any water, 47% said their organization's greatest barrier to saving was that they have nothing to save. Other important barriers included that they can't control user behavior (20%); that they have technical requirements that prevent water savings (19%), or that they don't know what to do (10%). Only 3% said that money was a barrier to action.
- When asked what their utilities should do to work with them to use water more efficiently, the most common advice was to do more outreach: 34% said to publicize their services more, another third said to provide them with more and better information, and a small percent advised more in-person contact.
- Two-thirds of respondents said they would like their utility to contact them about water conservation services.

2.4 BENEFITS OF WATER CONSERVATION TO BUSINESSES

Why should the average commercial or industrial customer, who uses large quantities of water at relatively little cost and, often, with little thought, conserve water in their operations? Businesses spend much of their time focusing on the bottom-line and on producing a quality product or operating in a manner that satisfies its customers. The benefits of water conservation are not always readily apparent to these businesses, which sometimes perceive conservation to impede the priorities of their organization.

But this is beginning to change, as growing urban and suburban populations tax our aging water and sewage systems. Because of infrastructure limitations, water shortages and a continually increasing population, the effects of rising water costs are being felt more and more. Businesses and institutions realize higher operating expenses due to increased water and sewer rates. These increased expenses often must be passed on to consumers or taxpayers. Businesses with foresight and forward thinking management are seeking out ways to conserve water. In a recent research project using data from public sources, Karin Sable and Eban Goodstein, in a report special to The Seattle Times, found that 137 firms and organizations in Washington and Oregon have reported voluntary cuts in water and energy use, waste and the use of toxic materials. These organizations also reported saving over \$42 million dollars through these actions.

A Real-life Example of the Benefits of Water Conservation

Customer: Birmingham Steel

When Birmingham Steel, located in Seattle, tallies the benefits of water conservation, they add up to more than the many gallons of water saved each day, as Bart Kale reports. Kale said though economics comprise about 60 to 70 percent of the benefits of the company's water conservation efforts, 20 to 25 percent of the benefits relate to compliance with regulations and five percent to other benefits.

Birmingham Steel has saved money on the initial cost of buying water and on costs related to discharge, including less operation and maintenance of the treatment facility and savings in sewer costs. In addition, Birmingham Steel also saved money on its environmental permits because it was discharging less and didn't have to expend the costs related to sampling and getting the permits.

The Association of Washington Businesses recognized Birmingham Steel's achievements with an award, which has helped the company maintain a positive image. For a facility located in the middle of Seattle, such recognition helps make the community aware that it is a good neighbor.

The installation of a computer-controlled system allows for more cost-efficient use of water at the company, with the system automatically selecting the best source of water for a given process. The system is designed to first use water from the company's recycling system, then from a well and, if the first two options do not provide enough water, to select water from the city.

But, Kale emphasized, steel is a commodity and the industry makes money by lowering its production costs, not by lowering its prices. Conserving water has helped Birmingham Steel lower its costs of production, thus giving the company a competitive edge over other steel manufacturers.

Benefits reported by companies who have reduced their water consumption include:

- Reduced water bills : Savings in water, chemical, maintenance costs.
- Reduced wastewater bills : Less water going in means less wastewater going out, cutting firms' sewer service costs.
- Energy savings: The money saved on energy for heating, pumping and treating water.
- Recognition/public relations: Companies and other organizations perceived to be protecting the environment enjoy a distinct competitive advantage. Achieving awards for doing "the right thing" such as saving salmon makes them better neighbors.
- Lower facilities construction costs : Designing a new facility (or reconfiguring an existing one) with water efficiency in mind can reduce water, wastewater, and stormwater infrastructure costs; it may also expedite land-use approvals and make it easier to meet codes, ordinances and other regulations.
- Higher work productivity: Knowing that they are making a positive impact in the workplace by conservation of water, saving salmon, etc. leads to improved morale and longer retention of workers.
- Increased competitiveness: Conserving resources makes businesses less vulnerable than their competitors in a market environment with tight margins and creates elasticity for them. Moving toward sustainable practices should increase the bottom line over time.
- Improved industrial processes : Re-examining processes to minimize water and energy waste can suggest entirely new – and better – ways of accomplishing the same tasks.
- Reduced labor: Similar to the benefit highlighting improved industrial processes, water conservation measures can often lead to reduced labor. The installation of automatic control systems to regulate water use, for example, can also reduce labor. Recycling water in pools or fountains can reduce labor because the water is being filtered as it is being recycled and less

cleanings are required (as opposed to dump and drain method of operation, which uses more water and is more labor intensive).

- Environmental benefits: Using less water leaves more for local streams, wetlands, and their natural inhabitants. Water quality is becoming a bigger and bigger and more costly issue (a liter of bottled water is more expensive than a liter of gasoline!).
- Use of less chemicals: If less water is being processed and treated, companies can reduce their use of chemicals, saving money and protecting the environment.
- More hot water: Reducing water use helps increase the capacity of the hot water boiler, making more hot water available for guests, tenants and laundry.
- Less regulatory requirements: Companies that treat and process less water (thus reducing or eliminating wastewater discharge) can reduce or eliminate the need for permits.
- Reliability and sustainable growth: Initiating practices to save water helps ensure that enough water is available for existing commercial and industrial use as well as for sustainable growth.
- Improved management skills for resource management: A key benefit to water conservation that should not be overlooked is the benefit to the individual employee or to management who instigates and successfully achieves water conservation. This type of action can be beneficial to an employee's career or garner increased accolades for management. While the priorities of the company are paramount, it is individuals who may be motivated by personal benefits.

2.5 VENDORS

The RICE Group interviewed vendors and found a significant lack of awareness and knowledge of SPU's commercial water conservation program. SPU staff, on the other hand, indicated relative success with vendor programs. Given the small number in vendor interviewees, it may well be that sales people in their or other organizations are more aware of existing program. One vendor suggested that program participation could be improved if vendors were able to take a more active role in preparing paperwork for customers.

The Business & Industry Resource Venture conducted a vendor luncheon late in 2000 and received excellent participation and feedback from sales representatives. We recommend that this group of vendors, or a portion thereof, be involved in helping develop SPU's final vendor program strategies.

2.6 ASSOCIATIONS AND ORGANIZATIONS

Resource Management Associates interviewed key staff from several organizations that the consultant team considers to be potential allies and partners for SPU and local water utilities. Among those interviewed were the state Department of Ecology, King County Natural Resources Solid Waste Department/Green Works, Puget Sound Energy, ASHRAE, General Administration Plant Operations Support Consortium, SPU Customer Service Representative, and the University of Washington.

Our interviews revealed that most organizations are willing to explore the idea of collaborating and partnering with SPU. This interest seemed to be expressed more strongly by organizations that could readily identify benefits from such a partnership.

The Department of Ecology representative interviewed was very interested in the 1% Water Conservation program and indicated that they would like to be involved and supportive in any way possible. The agency currently is involved in water conservation primarily from the standpoint of

issuing water rights or regulating water quality. Through its policies and regulations, Ecology could promote conservation in a way that it currently does not. They are interested in further exploring opportunities for partnership.

King County Natural Resources, Solid Waste Division operates the Green Works program. Green Works and Green Works Construction provide certification to businesses in the King County Metro service area that meet the programs eligibility requirements. They already work with the Business & Industry Resource Venture, which will be conducting much of the outreach for 1% Water Conservation. The staff of this program were interested in exploring partnership opportunities, though they expressed concern over meshing program deliverables and resources.

Puget Sound Energy, a private utility, currently is working with SPU on a limited basis, on the Resource Conservation Manager Program and WashWise. PSE is interested in expanding their RCM program, however is lacking funds to do this. This utility sees a significant potential in working with SPU to enhance customer service. They would be interested in participating in a partnership summit, but do not want to become involved in a long, drawn out process. They are very interested in immediate opportunities and results.

ASHRAE is an association of professional engineers and its services are geared toward engineers employed by businesses (rather than the businesses themselves). This association provides much training for its members, however it has not addressed water conservation in any depth and it does not have any direct relationship with SPU or other utility. The organization is interested in a presentation by an SPU representative on the conservation programs and engineering practices related to water conservation.

The State General Service Administration runs a Plant Operations Support Consortium, which provides a range of technical support services to organizations. This program is linked with another GA program, the Resource Conservation Manager program (RCM). The consortium has over 90 agency members, including facility managers from school districts, universities, ports and municipalities. The consortium does not have any connections with SPU or other utilities, but it is becoming a clearinghouse for a variety of conservation programs. There is a potential for SPU to market water conservation programs through the consortium.

The University of Washington representative interviewed indicated that he could help initiate contact and coordinate UW participation in any SPU program efforts. The UW has accomplished modest water conservation improvements, and recognizes that more opportunities exist for conservation. The SPU key services representative assigned to the UW account indicated that large financial savings and/or incentives are the primary drivers for participation.

2.7 SEATTLE PUBLIC UTILITIES

SPU staff participated in a facilitated discussion to provide information that would help the consultant team build on the utility's work to date. In the discussion, SPU staff expressed that:

- The best opportunities for savings exist with churches, golf courses, hospitals, institutions and multifamily; with cooling equipment (since it covers a broad range of commercial/industrial customers); and with little industrial processes that SPU doesn't know much about, but where water goes to one process.
- Rebates on toilets and ice machines have worked well. Incentives that are paid right away seem to be most successful.
- It is helpful when other organizations refer customers to SPU for incentives.
- More customers have applied for incentive programs than have followed through.

- Customers need help to be more confident of projected savings. More education is needed and helps to show customers how to pay for projects.
- There is no recognizable reward to businesses for conservation.
- Seattle City Light is willing to join in projects where perhaps not every measure saves energy, but the focus is on the overall package and savings.
- Partnerships with other utilities or agencies need to be formalized agreements.
- Rate increases have helped reduce water use.
- Staff tried doing an audit program, but the implementation rate was low. Issues included: payback; reward/risk ratio; identifying the person responsible for conservation as a whole (usually responsibilities are divided). Not a big believer in audit approach.
- Seattle City Light performs operation/maintenance audits and these provide quick paybacks; low or no costs; more commitment from the customer upfront because part of the process involves a work plan for carrying out SCL's recommendations. This seems to be resulting in more follow through.

2.8 Water Conservation Efforts of Others

In July 2000 the consultant team completed three key pieces of research to assess what other cities, utilities and purveyors are doing in regard to water conservation in the commercial / industrial sector. We collected information on 12 utilities or water agencies outside of the Northwest region, water programs in six Northwest cities, and 20 water providers that purchase water from Seattle Public Utilities. Detailed information is attached at the end of this summary.

Water Utilities Outside the Seattle/King County Area

The purpose of investigating water conservation approaches in other areas was to determine whether there are lessons to be learned from other utilities and water agencies about the packaging and delivery of water conservation measures. We did not attempt to collect information on a large number of programs, but rather get a general idea of what approaches others are taking. Our information was obtained via telephone interviews or the Internet.

The utilities or water agencies for which we collected information include:

- Austin
- California Urban Water Conservation Council (CUWCC)
- City of Bellingham
- City of Everett
- City of Mesa, AZ Utilities Department
- City of Olympia
- City of Portland
- City of San Diego Water Department, CA
- Clark Public Utilities (Vancouver)
- Denver
- East Bay Municipal Utility District, CA (EBMUD)
- Enbridge Consumers Gas, Ontario, Canada
- Houston, TX
- Los Angeles Department of Water and Power (LADWP)
- Metropolitan Water District (Bill McDonnell, 213-217-7693)

- Pasadena Water & Power, CA
- Phoenix, AZ
- San Diego Water Authority (Vicki Driver, 619-682-4152)
- Santa Clara Valley Water District, San Jose, CA (408-277-8420)
- Tacoma Public Utilities

Generally, more cities outside the Northwest, in drier climates such as California, have active programs for commercial/industrial water conservation. From Bellingham, Washington, to Portland, Oregon, only Seattle and Portland appear to have well-developed programs.

Top Approaches Used by Others

Common approaches exist throughout the commercial/industrial programs of the water agencies and utilities with established programs, including:

Audits and Assessments: Most offer free or assisted on-site audits or assessments of indoor and water use, with an emphasis on cooling towers and irrigation. Some followed up with reports and recommendations for water savings.

Incentives: Most provide financial incentives, including rebates and vouchers. One agency specifically noted that business participation increased with the use of incentives.

Most Common Measures: The most common water conservation measures marketed to the commercial/industrial sector include toilets and faucets, cooling towers, washers (laundries), ice machines and irrigation.

Recognition: Several provide recognition programs for business participants.

Not surprisingly, there seemed to be an emphasis on large water users among the programs, with free services and assistance targeted to big users. Much emphasis was given to water savings and the ensuing financial benefits, however less attention was paid to the other benefits of water savings (not in all cases, but in many). In fact, it was two non-water agencies that seemed to have programs that talked about water savings going hand-in-hand in energy savings - a gas company and a water/power company. Because our interview base was small, this statement may not be reflective of water agencies as a whole.

Water Utilities in the SPU Regional Customer Service Area

In June 2000, a questionnaire was sent to purveyors in an effort to collect information about commercial and industrial sector water conservation among their customers. The goal of the questionnaire was to provide an understanding of what purveyors are doing on commercial/industrial water conservation and how they would like Seattle Public Utilities to work with them to deliver water conservation measures to their commercial/industrial customers. Twenty of the 27 purveyors responded to the questionnaire, although two made comments only and did not answer the questions.

Key Findings

- (1) Purveyors indicated that lack of awareness about incentives and benefits and issues of cost-effectiveness are the biggest obstacles for their commercial/industrial customers in implementing water conservation.
- (2) In order for their commercial/industrial customers to participate in water conservation, most purveyors said they need to be made aware of incentives for and benefits of water conservation. They also indicated a need for financial assistance.

- (3) Most purveyors do not seem to have information about partnering opportunities with other agencies and programs. Only two said they know of opportunities and only one provided a recommendation, which was to partner with King County Metro to obtain additional financial incentives from wastewater savings.
- (4) Purveyors identified a number of different types of customers with a high potential for conservation savings. Topping the list was irrigation, which was identified by five purveyors, and multifamily, which was identified by three purveyors. Ten purveyors provided customer contacts that might be interested in water conservation.
- (5) Purveyors provided numerous ideas on how SPU can best work with them to identify, contact and conduct outreach to their commercial and industrial customers. Most of the responses dealt with the need for informational materials to distribute to customers.
- (6) More than half the responding water purveyors have staff assigned for water conservation.
- (7) Eight purveyors said they conduct outreach or marketing on water conservation to their commercial/industrial customers. The most common methods include purveyor newsletters and inserts in utility bills.
- (8) None of the purveyors responding to the questionnaire have ever offered water conservation programs or promotions to their commercial/industrial customers (in addition to what is offered by SPU).
- (9) Purveyors feel that commercial/industrial customers received most of their information and assistance for water conservation from their local water provider and/or SPU.

3. Recommendations for Packaging Conservation Measures

3.1 Background

Seattle Public Utilities (SPU), with local water utilities, has run a commercial / industrial program for water conservation for many years. Businesses that have participated in the program have demonstrated good success in water conservation. Seattle Public Utilities and the local utilities now wish to expand the program to accomplish the goals of 1% Water Conservation.

The goal of these packaging recommendations is to make water conservation measures accessible, credible and attractive to the commercial and industrial customers served by SPU and its water purveyors. SPU, with others, already has conducted extensive research on water conservation measures and projected savings for the commercial/industrial sector. This report takes the next step and recommends a comprehensive strategy that packages and prioritizes water conservation measures and customers in a way that is most likely to encourage adoption and installation by business and industry. Emphasis has been placed on producing the most cost-effective water savings possible.

The delivery strategy makes specific recommendations on which client groups and measures to target in order to achieve water savings while optimizing administrative and incentive investments by utilities. It provides a programmatic design tool that utilities can use to tailor their own program to meet the 1% Water Conservation goals. Utilities can choose from an array of program measures organized around client groups, with the flexibility to mix and match based on their programmatic needs. This flexibility also allows for responsiveness to marketplace changes, such as availability of the water resource and changes in technology or the nature of consumers.

3.2 Methodology

The consultant team used information collected during research and from customers, vendors and purveyors to develop recommendations for packaging and delivering water conservation measures. The consultant team:

- ◇ Identified opportunities for coordination and partnership with other organizations.
- ◇ Identified benefits of water conservation to the commercial/industrial sector.
- ◇ Reviewed measure costs, return on investment information and incentive program options.
- ◇ Developed criteria for selecting and prioritizing water conservation measures.
- ◇ Developed criteria for prioritizing customer sector groups.
- ◇ Building on the CPA, disaggregated commercial sector groups and identified individual program measures / program measure packages for appropriate sectors.

- ◇ Developed delivery strategy options.

3.3 Classification of Customers

Defining Commercial & Industrial Customers

Individual commercial/industrial customers should be defined in a way that best achieves the following results:

- Highlights customer types with highest potential for water savings.
- Aids in packaging measures and computing savings projections through grouping of customers with similar types and intensity of water use.
- Promotes sharing and comparison of results with other utilities.
- Is reasonably compatible with Industry Standard classification methods.
- Is easy to understand and apply.
- Facilitates targeting of outreach efforts and tracking of results in order to maintain reasonable distribution of benefits (equity) both across purveyors and among customers.
- Includes tracking by ownership type (public, private, non-profit, chain).

To achieve these results, it is recommended that a two-tiered customer identification system be used. For the first tier it is recommended that a set of 28 or more “customer classification codes” be used to identify a specific type of business, such as “restaurant” or “service station.” For the second tier, these customer classifications are grouped into eight broader market segments. Additionally, a third set of account identifiers may be used for ownership type (various public, private, non-profit).

Recommended Customer Classifications

It is recommended that all individual customers be identified using a revised set of customer classification codes. Each classification code will be defined using SIC (Standard Industrial Classification) codes (or the more current NAICS codes), as much as possible, to promote standardized definitions and sharing of data among utilities. In addition, it is recommended that classification codes coincide, whenever possible, with those developed and used by the California Urban Water Conservation Council in its *Commercial / Industrial / Institutional Ultra Low-Flow Toilet Savings Study*.

Previously assigned SIC Codes may be used as a help in assigning classification codes. However, the larger accounts especially should be double checked for improperly assigned SIC codes. A table of SIC code definitions is available online from the Department of Labor at www.osha.gov/oshastats/sicser.html. Various versions of SIC Code lookup software are also available, including a free version from World Market Watch, Inc. at www.wmw.com/sic.html.

A set of Recommended Customer Classifications is given in Table 1. The applicable two-digit SIC codes are given alongside for reference purposes only. A more precise four-digit reference may be generated using one of the resources listed above. However, before use of existing four-digit codes, the larger accounts at least should first be reviewed to verify that the codes have been properly assigned.

Table 1. Recommended Customer Classifications

Customer Classification Code	Defining SIC Codes
1. Food Processing, Wholesaling and Cold Storage	20, partial 51
2. Glass, Cement, Gypsum, Brick	32
3. Other Manufacturing (non-food)	21-31, 33-39
4. Laundry & Laundromats	partial 72
5. Laboratories (inc. film processing)	partial 73
6. Public Ports, Airports & Mass Transit	41, 44 (ex. marinas), 45, 47
7. Marinas	partial 44
8. Transportation, Storage, Comm. & Utilities (private)	42, 46, 48, 49
9. Shopping Centers & Multi-Tenant Retail	partial 65
10. Other Wholesale & Retail (non-food or gas)	50-53 (ex. partial 51), partial 55, 56, 57, 59
11. Food Stores	54
12. Service Stations	partial 55
13. Eating & Drinking	58
14. Offices & Mixed Use	60-69 (ex. Partial 65), 81, partial 83, 87
15. Hotels, Motels	70
16. Athletic Clubs	partial 79
17. Cinemas, Amusement & Recreation, Museums	78, partial 79, 84
18. Hospitals	partial 80
19. Health & Dental Clinics	partial 80
20. Assisted Living & Rehabilitation Centers	partial 83
21. Colleges & Universities	partial 82
22. Primary & Secondary Education	partial 82
23. Parks, Cemeteries, Golf Courses	6553, 8399
24. Nurseries & Agriculture	01
25. Multi-family Apartments & Public Housing	partial 65, partial 95
26. Churches & Membership Organizations	86
27. Public Facility Management	partial 91-99
28. Construction, Repair, & Misc. Services	03-19, partial 72, partial 73, 75, 76, 89

Recommended Commercial/Industrial Market Segments

For program development and tracking, commercial / industrial customer classes maybe grouped into the following eight broad market segments, with primary conservation measures and target customer classes as outlined in Table 2. Although certain market segments may be more heavily represented in one purveyor service area vs. another, segments have been configured in such a way that an outreach program with a balanced approach to all eight segments should result in an equitable program for all service areas.

Ownership Codes

In addition to Customer Classification Codes, each customer should be provided a separate, additional identifier, indicating ownership as Public (Muni, County, State, Fed, Port, School Dist., Other Public), Non-Profit or Private. Private businesses with a number separate facilities, such as Boeing, Safeway, Starwood Hotels, etc. may be identified by abbreviated name.

Target customer classes represent the most significant water users for each segment, based on analysis of billing information.

Table 2. Market Segments

Market Segment (and applicable measures)	Target Customer Classes
1. Hospitality, Recreation & Religious <ul style="list-style-type: none"> • toilets • showers • ice machines • cooling • laundry 	Hotels & Motels Athletic Clubs Entertainment & Recreation Centers Restaurants
2. Education <ul style="list-style-type: none"> • toilets • showers • irrigation • cooling 	College and University Primary and Secondary Schools
3. Commercial Irrigation <ul style="list-style-type: none"> • toilets • irrigation 	Parks Golf Courses Cemeteries
4. Transportation, Utilities, Storage & Communications <ul style="list-style-type: none"> • toilets • process control • water recycle • cooling 	Port & Airport Mass Transit
5. Multi-family <ul style="list-style-type: none"> • toilets • showers • laundry • irrigation 	Apartments Public and Military Housing Condominium Associations
6. Health & Human Services <ul style="list-style-type: none"> • toilets • showers • ice machines • vacuum pumps • cooling 	Short-term Care Hospitals Assisted Living & Rehabilitation Centers Charitable Services
7. Office & General Commercial <ul style="list-style-type: none"> • toilets • cooling • irrigation 	Office Buildings Mixed-use Office/Retail New Construction (General Commercial)
8. Manufacturing & Process <ul style="list-style-type: none"> • toilets • process control • water recycling • cooling 	Food Processing and Cold Storage Manufacturing & Process (non-food) Glass, Cement, Gypsum, Brick Other Large Manufacturing Laundries Laboratories

Within each of the eight identified market segments, one or more customer classes may be targeted at any given time, with the possibility of adding and dropping individual targeted customer classes from year to year.

3.4 Criteria for Prioritizing Water Conservation Measures

The consulting team has reviewed conservation activities and issues from a variety of sources both with the Pacific Northwest and throughout the U.S. The goal of this section is to provide a framework by which to set forth measures that match various water customer needs and, at the same time, fulfilling the goals of the 1% Water Conservation initiative. To accomplish this goal, measure selection criteria have been created and ranked into three levels to address the multifaceted aspects of each conservation measure. The primary purpose in describing the selection criteria is to document the approach and methods used to recommend measures and packages for marketing to customers. The secondary purpose is for Seattle Public Utilities (SPU) and purveyor partners to revisit these criteria and priorities periodically to recalibrate the program offerings to meet changes in market demands.

LEVEL 1 CRITERIA

1. Measure Effectiveness

This criterion is the highest priority of all the criteria. *Measure Effectiveness* includes technical and cost parameters. The elements of cost-effective measures include:

- High savings in peaking season (measured in ccf, or hundred cubic feet)
- Low program costs (below supply peak costs)
- Low levelized costs
- Short payback period for customers (two years or less)

Water conservation measures based on levelized costs alone are dependent upon the accuracy in assessing both cost and savings. Seattle Public Utilities' 1998 *Water Conservation Potential Assessment* (CPA) cites a margin of error of +/- 15 percent accuracy of assessed water savings, and +/- 25 percent cost for those savings. This is high margin of error. Some measures that may be effective but deemed too costly will be overlooked and not implemented according to CPA data. This criterion should be updated yearly as the structure of conservation changes

LEVEL 2 CRITERIA

2. Measure Life and Maintenance Vulnerability

Life of measures is critical to cost-benefit assumptions which are fundamental to program investments. A part of any multi-year program is re-investment in measures with life that does not extend to the end of the program timeframe.

Criteria Review

SPU and local water utilities reviewed these criteria. When asked to prioritize the top five criteria, staff selected 1, 2, 3, 4 and 5, with criteria 1 and 5 rated as the highest priorities. The measure selections and packages in Section 4.6 are presented in light of the five most important criteria. All criteria were considered with each conservation measure and package. But the top five cited by utility staff will receive priority consideration.

After conducting the focus groups on measure and delivery issues, group facilitators were asked which criteria seemed to be the highest priority to customers. Criteria 1, 2, 3, 4 and 6 were identified. These selections were very similar to those identified by SPU, with the exception of criterion 6 (measure life and maintenance vulnerability). Maintenance came up as an important issue with focus group participants.

Maintenance vulnerability is an essential issue to building operations management. If certain measures are vulnerable to lack of maintenance, there is a significant risk with the investment in those measures. This, in turn, can lead to loss of confidence program objectives and approach. This criterion is a high priority for business.

3. Collateral Benefits and Leveraged Delivery

Water has many connections with other facets of facility costs. Examples of these are energy, wastewater and pollution reductions. Where possible, program measures with multiple impacts should be initiated. This can and should lead to partnering with other organizations or agencies, such as Seattle City Light, Puget Sound Energy, King County Metro, Washington State Department of Ecology, EPA, trade associations and vendor groups. All of these organizations have a vested interest in successful water conservation. Co-marketing of programs should be encouraged. A single benefit from SPU might not be sufficient motivation for action, but multiple benefits can be very compelling.

4. Potential Adoption Rate and Customer Interest

Due to public awareness and increased customer interest, some measures periodically have a high demand. This is often referred to as the “low-hanging fruit” for water conservation, and should be a basic part of any program offering.

5. Industry Standard and Proven Technology

Market acceptance of conservation measures is essential for retention of measures and savings. Measures that are proven technologies and/or standard to an industry facilitate market penetration.

6. End-use Transformation and Innovation

Current water conservation measures and existing technology may have applications for new conservation opportunities. Investment in water conservation technology/programs is maximized when multiple applications are identified. Wider audiences can be reached with less effort. Some risk involved with approaching new markets, however proven technology creates credibility.

LEVEL 3 CRITERIA

7. Continuity with Existing SPU Programs

Continuity creates trust with customers and vendors. SPU and purveyors can continue success with such programs as the Commercial Toilet Rebate, Water Smart Technology, Water Efficient Irrigation and Water Reuse, WashWise programs. Long-term programs are given long-term support. Active involvement in current programs allows continued contact with customers. Customers are in a better position to augment, suggest changes and potentially create more conservation opportunities. Creates potential for long-standing relationships with business community.

8. High Water Savings per Project and Unique Applications

Specific customers have exceptionally high usage rates both annually and seasonally. An assessment by Dethman and Associates estimated that 75 percent of SPU’s consumption resides with less than 10 percent of its customers. These clients would benefit from special project of measures with high water savings per project. This may require non-standard projects with unique technical assistance to achieve savings. These projects might also be the testing ground for measures and applications that may offer broader implementation at a later date.

9. Public Visibility and Demonstration Publicity

Public awareness and general support are valuable marketing components to SPU, purveyors and their customers. Public perception of water conservation can provide motivation to market sectors for certain conservation measures..

10. Free Riders

SPU should focus on measures that are less likely to be installed without assistance from the utility.

3.5 Identification of Measures

CPA Identified “Cost-Effective” Measures

Given a current marginal cost of \$2.41/ccf for new peak season supply, Seattle Public Utilities’ CPA identified a “Cost-effective Package” of water conservation measures, representing a savings of 31 mgd by year 2020 (a 16 percent per capita reduction). The average measure cost is \$1.52/ccf, with the most expensive measure projected at \$2.39/ccf. Of this, 31 mgd of cost-effective savings, approximately 1/3 (10.3 mgd) is projected to come from the commercial/industrial sector.

The 14 measures identified in the CPA “Cost-effective Package” for Commercial Landscape, Commercial Domestic and Commercial Process are listed in Table 3, in order of highest to lowest gpd of savings.

Table 3. Cost-effective Measures for the Commercial / Industrial Sector

(Identified in the 1998 Water Conservation Potential Assessment)

Highlighted measures represent some of the largest projected savings potentials.

Commercial Measures Contained In CPA “Cost Effective Package”	Peak Season Savings (mgd)	Participation Rate Year 2020 (accounts)	Unit Direct Meas. Cost	Acc’ts	Life	Peak Season Level’d Cost
1. Switch to Air Cooling*	4.30	90% w. water cooling	\$1,000	5,515	10	\$2.26
2. Install 1.6 gpf Toilets ¹	1.35	95% w. 3.5+ gpf toilets	\$65	8,164	20	\$1.31
3. Improve Cooling Tower Performance*	1.15	75% largest w. CT’s	\$750	1,712	10	\$1.00
4. Improve Control of Process Water*	0.94	50% largest w. process	\$2,500	580	5	\$2.23
5. Improve Irrigation Scheduling	0.52	50% w. irrigation	\$30	9,112	5	\$1.66
6. Install 1.0 gpf Urinals	0.41	95% w. high fl. urinals	\$45	7,348	20	\$1.78
7. Recycle Laundry Washwater	0.39	50% w. large laundries	\$10,225	176	20	\$1.93
8. Install Waterless Urinals	0.33	15% w. high fl. urinals	\$200	4,686	20	\$2.36
9. Water-efficient	0.29	90% w. small	\$500	88	10	\$1.65

¹ The toilet savings shown do not reflect the additional potential saving from multifamily apartments.

Commercial Measures Contained In CPA "Cost Effective Package"	Peak Season Savings (mgd)	Participation Rate Year 2020 (accounts)	Unit Direct Meas. Cost	Acc'ts	Life	Peak Season Level'd Cost
Clothes Washers (Non-residential)		commercial cap., >10 loads/day				
10. Install Weather-based Irrigation Control	0.27	80% largest auto sys.	\$1,500	716	20	\$1.01
11. Install Soil Moisture Sensors	0.21	20% w. auto. systems	\$200	3,645	20	\$1.63
12. Improve Swimming Pool Use	0.11	50% w. pools	\$0	122	1	\$0.09
13. Eliminate Single-Pass Decorative Features	0.02	90% w. 1-pass features	\$675	4	20	\$0.07
14. Improve Hot Tub Use	0.02	50% w. hot tubs	\$0	195	1	\$0.74
Total	10.30					

* Measures to be broken down into more specific sub-measures.

Measures with the Largest Savings Potential

The three measures highlighted in Table 3 (1, 3 and 4) represent some of the largest project savings potentials, and may be broken down into the following sub-measures.

Measure 1: "Switch to Air Cooling" for the following:

- Single-pass, water-cooled ice machines and coolers
- Single-pass, water-cooled air conditioning heat pumps
- Liquid ring vacuum pumps
- Single-pass, water-cooled industrial equipment

Measure 3: "Improve Cooling Tower Performance" by:

- Auditing cooling towers to reduce bleed rates
- Installing conductivity controllers
- Adjusting water treatment chemical concentration or chemical type to allow higher cycles of concentration

Measure 4: "Improve Control of Process Water" by:

- Installing automatic flow control devices including timers, solenoids, photosensors, and conductivity controllers
- Reducing chemical bath concentrations and/or switch chemical type to reduce rinsing requirements
- Replacing water rinsing with air cleaning
- Improving rinsing efficiency through various measures including use of spray rinse or counter flow rinse to replace dip rinse, installation of high pressure/low flow nozzles, addition of wetting agents and/or heating of bath water, and increasing drip time and/or improving rack arrangement

It is recommended that Measures 12 “Improve Swimming Pool Use”, Measure 13 “Eliminate Single-Pass Decorative Features” and Measure 14 “Improve Hot Tub Use” be removed from the list of measures to be actively promoted due to the small amount of savings attributed to each of these measures.

CPA Identified “Technical Potential” Measures

The 23 additional measures identified in the CPA “Technical Potential Package” for Commercial Landscape, Commercial Domestic and Commercial Process are listed in Table 4, in order of lowest to highest peak-season levelized cost.

It is recommended that only the top four (lowest cost) measures, which together account for over half of the projected savings from the “Technical Potential Package,” be considered for inclusion in the 1% Water Conservation program. These four measures, despite having projected costs somewhat above the computed marginal cost of new peak supply warrant further consideration. The CPA cost estimates are given as ± 25 percent, and the 1% Water Conservation program is targeting, over 10 years, only around 60 percent per measure of the CPA’s projected 20-year savings. It is therefore expected that many cost-effective projects could be completed under these four measures, accounting for substantial savings. In addition, customer interest, collateral benefit, and/or market transformation potential for each of these measures is high.

Measure 4, highlighted in gray, represents the single largest projected savings potential, and could be better analyzed if broken down into sub-measures as follows:

Measure 4: “Recycle Process Water”

- Reuse rinsewater as process water using minimal filtration
- Filter and/or treat process water for recycling back to the same process
- Collect condensate, single-pass cooling water, or reverse osmosis reject water for use as process water or for cooling tower or other non-process use.

Table 4. Technical Potential Measures

(Identified in the 1998 Water Conservation Potential Assessment)

Highlighted measure represents the single largest projected savings potential.

* Measure to be broken down into more specific sub-measures.

"Technical Potential Package" Measures in CPA	Peak Season Savings (mgd)	Participation Rate Year 2020 (% of acc'ts)	Unit Direct Meas. Cost	Acc'ts	Measure Life	Peak Season Levelized Cost
1. Install Recirculating Cooling System	0.13	10% w. 1-pass systems	\$500	336	10	\$2.62
2. Improve Performance of Irrigation Systems	0.75	50% w. irrigation	\$250	9,112	5	\$2.73
3. Install Auto Rain Shut-Off	0.30	80% w. auto. Systems	\$50	14,579	20	\$2.79
4. Recycle Process Water*	1.88	50% largest process	\$25,000	580	20	\$3.19
5. Install Low Water Use Plantings	0.05	80% of new & remodel	\$25	2,795	20	\$3.25
6. Dry Sidewalk Cleaning	0.04	80% of washing	\$0	1,787	1	\$3.42
7. Comprehensive Leak Reduction	0.21	90% w. largest leaks	\$1,000	500	5	\$3.52
8 Stormwater for Irrigation	0.02	10% large new construction	\$12,000	240	20	\$3.80
9. Improve Perf. for Steam Boilers	0.16	50% largest w. boilers	\$500	816	5	\$4.13
10. Improve Soil Amendments	0.08	80% new & remodel	\$150	4,192	20	\$4.13
11. Install Fill Cycle Diverters	0.03	50% w. 3.5+ gpf toilets	\$5	2,029	20	\$5.02
12. Recycle Wastewater for Process	1.53	50 Duwamish accts.	\$500,000	50	20	\$6.28
13. Improve Food Prep. and Washing	0.21	50% w. food prep.	\$50	9,791	5	\$6.77
14. Install Drip/Bubbler Irrigation	0.04	35% of new & remodel	\$1,000	1,126	20	\$7.27
15. Switch to Low-flow Car Wash Equipment	0.01	95% of hose washing	\$300	128	5	\$9.43
16. Improve Disposal Usage	0.11	50% w. disposals	\$50	9,791	5	\$13.31
17. Install Redesigned Toilet Flappers	0.02	40% w. leaking toilets	\$8	3,471	20	\$14.23
18. Stormwater for Toilet & Urinal Flushing	0.18	60 large new accounts	\$100,000	60	20	\$14.63
19. Improve Recycle Water for Vehicle Wash	0.00	38 accts. w. recycle sys.	\$3,800	38	20	\$14.67
20. Improve Dishwasher Efficiency	0.24	50% w. dishwashing	\$1,000	2,448	5	\$17.01
21. Improve Maintenance of Turf	0.08	80% w. irrigation	\$75	10,553	5	\$19.40
22. Recycle Water for Retail Car Washers	0.01	10 accts. w/o recycle	\$33,000	10	10	\$22.82
23. Reduce Faucet "Run Until Hot" Use	0.02	50% of new & remodel	\$1,500	4,598	20	\$135.80
Total	6.02					

Additional Water Conservation Measures Not Included in the CPA

Eight additional commercial conservation measures are listed below, some of which were suggested by members of the CPA Technical Advisory Group. As noted, some may be considered as sub-measures to broader measures listed in the cost-effective or technical potential packages. No cost-benefit analysis has been conducted on these measures.

1. Replace high-flow (3.5+ gpm) showers with showers using 2.5 gpm or less at locations where high flush toilets and/or urinals are being replaced: 1.5 - 2.5 gpm showers are available and in use in a number of high-end hotels and institutional facilities.

2. Install low-flow faucet flow restrictors on lavatories for locations where high flush toilets and/or urinals are being replaced: Aerators and laminar flow restrictors are available in 0.5, 1.5, 2.0 and 2.5 gpm models. For most commercial and institutional applications (excluding kitchens), 1.5 - 0.5 gpm may be preferable to currently standard 2.5 gpm restrictors. Lower flows cause less splashing onto surroundings, resulting in improved appearance and easier cleanup.

3. Install 0.5 gpf urinals: Urinals are available with minimum flushing requirements of 0.5 gpf. Urinal flush valve kits are also available for conversion of existing valves to 0.5 gpf performance (for use with washout urinals only).

4. High-efficiency plumbing equipment installed as part of a successful LEED application: Provide technical assistance and/or incentives to cover some fraction of any additional cost of installing more water efficient plumbing equipment than required by code, qualifying the project for water conservation points as part of a successful LEED Green Building certification (New, non-industrial construction only)

5. Amend local building codes to prohibit installation of new single-pass, water-cooled equipment.

3.6 Recommendations for Packaging Water Conservation Measures

It is recommended that priority measures be packaged as follows to focus delivery and outreach. This is not to be taken as a definitive list of measures that might be considered for funding. It is understood that all individual cost-effective measures will be considered by SPU as they come in the door. Some applications of measures will not be on this list and some from this list will be dismissed if not cost-effective.

Measure Groupings by End-Use

Domestic

- Toilet and urinal replacement (with optional shower/lavatory upgrades)
- Install 1.6 gpf toilets
- Install 1.0-0.5 gpf or waterless urinals
- Install 0.5-1.5 gpm lavatory flow restrictors (with toilet/urinal replacement)
- Install low-flow showers (with toilet/urinal replacement)
- High-efficiency washers
- Hot tub and swimming pool water-quality improvements

Irrigation

- Irrigation audits and performance improvements
- Improve irrigation scheduling
- Install weather-based irrigation control
- Irrigation sensors and controllers
- Install soil moisture sensors
- Install auto rain shut-off

Process

- Process water
- Process water control
- Process water recycling
- Recycle laundry water
- Cooling and single-pass
- Cooling tower audits and performance improvements
- Cooling tower conductivity controllers
- Single-pass ice machines and coolers
- Single-pass air conditioning
- Liquid ring vacuum pumps
- Other single-pass equipment (air washers, decorative features and industrial cooling)

New Construction

- LEED (Green Building) Support
- Building Code Amendment (prohibit new single-pass cooling)

Measure Packages

An asterisk (*) identifies measures for which standard incentives may apply.

Toilet and Urinal Replacement*

- *Replace 3.5+ gpf toilets with approved 1.6 gpf toilets:*
Replace any 3.5+ gpf toilet with an approved 1.6 gpf toilet, including gravity tank, pressure assist, and flushometer models. The approved list will be reflect results of testing standards currently being developed by SPU in coordination with LADWP and other utilities.
- *Replace 3.0+ gpf urinals with 1.0 gpf, 0.5 gpf or waterless urinals:*
Replace any 3.0+ gpf urinal with a urinal and flush valve combination rated by the manufacturer to flush at 1.0 gpf or less.
- *Install 0.5 - 1.5 gpm lavatory flow restrictors:*
Simultaneous with each utility supported replacement of a commercial toilet or urinal with a low flush model, provide, at no additional cost, a vandal resistant 0.5 gpm lavatory flow restrictor for restrooms open to the general public or a 1.5 gpm lavatory flow restrictor for other restrooms. It is not recommended that this be offered as a stand-alone measure.
- *Replace 3.5+ gpm showers:*
Simultaneous with each utility supported replacement of commercial toilets with low flush models, replace 3.5+ gpm showers with models using 2.5 gpm or less. (For facilities with residential style overnight use, such as hotels/motels, multifamily, hospitals, marinas, & assisted living). It is the intention that an incentive offered through this measure could provide a means to shorten the payback period for toilets being replaced at these facilities. It is not recommended that this be offered as a stand-alone measures.

High-efficiency Washers*

- For laundromats, multi-family, and other facilities with top loading washing machines, replace with approved high efficiency front-loading machines for a standard incentive.

Irrigation Performance Improvements & Controllers*

For significant irrigators (with one acre or more under irrigation), fund a free audit by an accredited landscape professional, to recommend improved scheduling and to identify other performance improvements. Incentives may then be offered for specific cost-effective savings identified in the audit. Performance improvements may include, but not be limited to the following irrigation sensors and controllers:

- Install weather-based control.
Provide a standard incentive for conversion of an existing system to one with automatic weather-based control.
- Install soil moisture sensors.
Provide an incentive for conversion of an existing system to one with soil moisture sensors. Incentives may vary according to number of sensors installed.
- Install automatic rain shut-off.
Provide a standard incentive for addition of an automatic rain-off sensor to existing automatic systems compatible with this option.

Cooling Tower Performance Improvements and Conductivity Controllers*

- Provide free audits to inspect existing cooling towers and recommend performance improvements, including ways to reduce bleed rates.

- For facilities with cooling towers without conductivity control, provide an incentive to install conductivity controller, for a standard incentive.

Retrofit Single-Pass Water Use

- For facilities with existing single-pass air conditioning, provide an incentive to replace with air-cooled models, or install a recirculating cooling system. Incentives would vary with projected savings.
- For facilities with existing single-pass water, food or beverage coolers, provide an incentive to retrofit to air-cooled. Incentives would vary with size of machine.
- For facilities with existing single-pass liquid ring vacuum pumps, provide an incentive to retrofit with recirculating air-cooled loops.
- For facilities with other existing single-pass equipment including process cooling and decorative use, provide an incentive to convert to air-cooled, or install a recirculating system.
- For facilities with existing single-pass, water-cooled ice machines, provide an incentive to replace machines with air-cooled models. Incentives may vary with the size of machine.

Recycle Laundry Water

- Provide an incentive to install process water filtration and/or recycle systems at commercial laundries. Systems may involve either minimum or maximum filtration. Incentives would vary with quantity of projected water savings.

Process Water Control

- For larger process water users, provide a free audit to identify water conservation opportunities. Incentives may then be offered for significant identified cost effective savings. Identified opportunities may include installation of equipment to reduce/control clean water use and equipment to filter/reuse process water. Potential sub-measures include:
 1. Install automatic flow control devices including timers, solenoids, photosensors and conductivity controllers.
 2. Reduce chemical bath concentrations and/or switch chemical type to reduce rinsing requirements.
 3. Replace water rinsing with air or vacuum cleaning.
 4. Improve rinsing efficiency through various measures including use of spray rinse or counter flow rinse to replace dip rinse, installation of high pressure/low flow nozzles, addition of wetting agents and/or heating of bath water, and increasing drip time and/or improving rack arrangement.

Process Water Recycling

- Provide an incentive to install process water filtration and/or recycle systems at service and industrial process water users. Systems may involve either minimum or maximum filtration. Incentives would vary with quantity of projected water savings.

LEED (Green Building Support)

- Provide technical assistance and/or incentives to cover some fraction of any additional cost of installing more water-efficient plumbing equipment than required by code, qualifying the project for water conservation points as part of a successful LEED Green Building certification (New, non-industrial construction only)

Building Code Amendment

- Amend applicable local codes to prohibit installation of new single-pass, water-cooled equipment

3.7 Application of Priority Criteria to Measure Packages

The following table illustrates how the recommended measure packages meet the top five priority criteria.

Table 5. Application of Level 1 & 2 Criteria

Measures \ Criteria	Measure Effectiveness	Measure Life and O&M Impact	Customer Interest/Potential Adoption	Collateral Benefits	Industry Standard	End-Use Innovation
Toilet & Urinal Replacement	●	●	●	●	●	
High-Efficiency Washers	●	●	●	●		●
Improve Irrigation Performance	●		●		●	
Improve Cooling Tower Performance	●		●	●	●	
Replace Single-Pass Ice Machines	●	●	●	●	●	
Retrofit Other Single-Pass Use	●	●		●	●	
Recycle Laundry Water	●			●		●
Process Water Control	●			●		●
Process Water Recycling	●			●		●
LEED Green Building Support	●	●		●		●
Amend Building Code	●	●		●	●	

● Strong Criteria Correlation ● Weak Criteria Correlation

4. Recommendations for Program Design

This strategy for program design makes specific recommendations on which client groups and measures to target in order to achieve water savings while optimizing administrative and incentive investments by utilities. It provides a programmatic design tool that utilities can use to tailor their own program to meet the 1% Water Conservation goals. Utilities can choose from an array of program measures organized around client groups, with the flexibility to mix and match based on their programmatic needs. This flexibility also allows for responsiveness to marketplace changes, such as availability of the water resource and changes in technology or the nature of consumers.

4.1 Customer Prioritization

As outlined in Chapter 4, eight broad market sectors have been identified in this report. These eight sectors were established in a way to ensure, that each sector includes businesses that are broadly represented among the various purveyor partners (equity).

Additionally, each sector was established to facilitate development and delivery of sector-specific packages of measures that would apply to both a smaller number of high users and a broader selection of more moderate users. For example, each purveyor may not serve a large hospital, but may well have assisted living facilities.

It should be noted that close to one-third of all commercial/industrial water use may be attributed to the public sector. **Effective targeting within the public sector will therefore be an important part of any outreach program.**

Criteria for Prioritizing Measures and Customers

Depending program goals and assessments these selection may shift to achieve success in different areas of the 1% Water Conservation program. The commercial / industrial customer make-up for SPU and the purveyors may create a need to establish a different set the criteria and goals for each.

The recommended packages of measures will be prioritized based on four factors:

- 1. Cost-effective with high savings:** These measures meet the cost-effective criteria of \$2.41/peak ccf and have the potential for high peak-use water savings values if market penetration is accomplished.
- 2. Variable Cost-effectiveness with high savings:** These measures show good promise to result in high peak-use savings, but are either marginally cost-effective or not cost-effective based on the current assumptions.
- 3. Cost-effective with low savings:** These measures meet the cost-effective criteria, but do not result in high peak-use savings at anticipated market penetration levels.
- 4. Not cost-effective:** These are measures that may or may not result in high peak-use savings, but do not meet the cost-effectiveness threshold for the applications.

Table 6 (on the following page) provides a matrix view of the market segments, measures and priorities. An additional four measures were added to the on the matrix on the following page under the heading of Technical Potential Measures. These measures show potential for high peak-use savings, but are not cost-effective with the current assumptions. Given that the cost-effectiveness assumption will shift within the next 10 years, it would be reasonable to view which measures are on the edge of viability (within 33 percent) of the cost-effective marker and show high potential for peak savings.

4.2 Segment Specific Packages Priorities

1. Hospitality, Entertainment, Recreation & Religious

High-Priority Packages

- Toilet and Urinal Replacement (Restaurant and Entertainment, Athletic Clubs)
- High-Efficiency Washers
- Cooling Tower Improvements
- Replace Single-Pass Ice Machines
- Recycle Laundry Water

Priority Packages

- Toilets and Urinal Replacement (Hotels and Motels)
- Irrigation Performance Improvements
- Retrofit Other Single-Pass Uses (Restaurant and Entertainment)

2. Education

High-Priority Packages

- Toilet and Urinal Replacement
- High-Efficiency Washers
- Irrigation Performance Improvements
- Retrofit Other Single-Pass Uses

Table 6. Matrix of Customer Classification and Measure Packages

	MARKET SEGMENTS																	
	Hospitality			Education		Commercial Irrigation			Transportation		Multi-family		Health		Office & General Comml.		Mfg & Process	
Measure Packages	Hotels / Motels	Restaurant and Entertainment	Athletic Clubs	College / University	Primary / Secondary	Parks	Golf Courses	Cemeteries	Port, Airport,	Mass Transit	Apartments & Condo Associations	Public & Housing	Hospitals	Assisted Living & Rehabilitation Centers, Charitable Services	Office	Mixed Use	Food Processing, Cold Storage	Non-food Mfg. & Process, Laundries, Labs
Toilet & Urinal Replacement		A	A	A	A	B	A	B	A	B	B	B	B	B	B	A	B	B
High Efficiency Washers	A			A							A			B				A
Irrigation Performance Improvements	B			A	A	A	A	A	A		A	A	B	B	B	B		
Cooling Tower Performance Improvements	A			B					B				A		B	B		A
Replace Single-Pass Ice Machines	A	A		B									B	B		B	A	
Retrofit Other Single-Pass Use		B		A									A		B	B	B	B
Recycle Laundry Water	A		A	B									A	A				
Process Water Control																	A	A
Process Water Recycle									B	B							A	A
LEED Green Building Support																		
Amend Building Codes																		

Legend:

- A** = Cost-effective with high savings
- B** = Variable Cost-effectiveness with high savings
- C** = Cost-effective with low savings
- Blank** = Not cost-effective

The shaded areas of the above tables indicate high peak usage saving potential in both the measure and customer categories.

The darker the customer classification shading, the larger the use for that class.

2. Education, cont.

Priority Packages

- Cooling Tower Improvements
- Replacement of Single-Pass Ice Machines
- Recycle Laundry Water

3. Parks, Golf Courses & Cemeteries

High-Priority Packages

- Irrigation Performance Improvements
- Toilet and Urinal Replacement (Golf Courses)

Priority Packages

- Toilet and Urinal Replacement (Parks and Cemeteries)

4. Transportation, Warehousing, Communication & Utilities

High-Priority Packages

- Toilet and Urinal Replacement (Ports and Airports)
- Irrigation Performance Improvements

Priority

- Cooling Tower Improvements
- Recycled Process Water

5. Multifamily & Coin-op Laundry

High-Priority

- High-Efficiency Washers
- Irrigation Performance Improvements

Priority

- Toilet and Urinal Replacement

6. Health & Human Services

High-Priority

- Cooling Tower Performance Improvements
- Retrofit Other Single-Pass Uses
- Recycle Laundry Water

Priority

- Toilet and Urinal Replacement
- High-Efficiency Washers
- Irrigation Performance Improvements

7. Offices & General Commercial

Priority

- Toilet and Urinal Replacement

- Irrigation Performance Improvements
- Cooling Tower Performance Improvements
- Replace Single-Pass Ice Machines
- Retrofit Other Single-Pass Uses

8. Manufacturing & Processing (food & non-food)

High-Priority

- High-Efficiency Washers
- Cooling Tower Performance Improvements
- Replace Single-Pass Ice Machines
- Process Water Control
- Process Water Recycling

Priority

- Retrofit Other Single-Pass Uses
- Toilet and Urinal Replacement

4.3 Targets and Projections for Savings

Targets and projections for savings continue to be based upon assessments done through the CPA. SPU staff took this information and put together a spreadsheet showing projected annual cost and savings, by measure, over the ten-year life of the 1% Water Conservation program. Upon review, the projected costs and savings detailed in their plan appear to be a well thought out, reasonably conservative application of CPA findings. However, the following changes are recommended.

General Concerns

1. Program Timeline

As SPU staff is aware, start and end dates for the program will need to be adjusted to reflect the current schedule.

2. Multi-family Housing

This is a significant market sector, which is substantially distinct from either single family residential or commercial-industrial. Demographic statistics included in the CPA indicate that in 1995, multi-family accounted for just over 200,000 households, while single-family accounted for just over 325,000 households. Costs and benefits for a number of measures, most notably for toilet replacement, for various irrigation measures, and for high-efficiency washers are substantially different for multifamily customers as opposed to single-family or commercial/industrial. In order to properly account for this sector, it is strongly recommended that multi-family be separated out as a third sector, in addition to a single-family residential sector and a commercial sector.

4.4 Incentive Program Recommendations

The Role of Incentives in Program Design

Incentives can have a profound impact in the short-term and mid-term economics of the marketplace beyond offsetting customer first costs in the purchasing of conservation measures. The influence of incentives must be melded with the market forces that drive purchase decisions, such as:

- Cost of measures, return on investment
- Ease of installation
- Traceable results from measure installation
- Vendor preferences
- Codes and ordinances

While the incentive is intended to motivate the customer to action and overcome the perceived barriers, the role of the incentive will be different with regard to the measure and the market forces. An example of this is the toilet rebate incentive. The primary purpose of the program is to replace old fixtures. Once replaced, new codes will require any subsequent purchases to have water saving features. There are secondary issues with the enlisting of particular technologies and increasing levels of conservation. But for the primary purpose, the fundamental goal is still to remove the old toilets from buildings and facilities. The incentive in this case must be sufficient to motivate unreceptive customers to take action. At the secondary level however, the additional incentive must offset the perceived risk of enlisting innovative technologies.

In the first case, the incentive benefit is sufficient motivation to achieve programmatic success in a code environment. However, in the secondary level customer acceptance and reaction to produce performance is the programmatic goal. In this case, incentives should not distort the economics of the purchase beyond the minimum to partially offset first costs. Programmatic emphasis should be placed on consumer interest in the product and all the associated benefits. This may require a broader marketing efforts emphasizing collateral benefits.

Program Timeline for Incentives

With the program start-up, high-priority measures should be closely evaluated to determine the role of incentives in the purchase motivation. In the first example with the toilet incentives, other programs in the region and throughout the county are offering incentives of \$85 or greater. The SPU incentive ranges from \$75 to \$120. Since in the programmatic objective is to remove as many old toilets as possible, the incentive should run at the middle to high end of the range to meet program penetration levels.

Some measures that have significant connections with other resource issues such as wastewater and energy may require greater focus on the code and ordinance areas to coordinate the benefits and sector impacts. Too high of incentives may lead to market distortion and decreased participation in absence of the subsidy. Incentive levels should be closely coordinated with vendor groups and association to anticipate potential adverse market impacts.

Incentive levels for hardware measures with high costs should be developed in coordination with manufacturers to set appropriate initial levels and ramped declines in exit strategies that removes the market subsidy. For example; Begin with a demonstration project 75 percent cost coverage; following the demonstration project, initiate a vendor rebate program to bring the ROI within two years. Continue vendor rebate for three years; following the vendor rebate

program, institute a vendor promotional subsidy for additional three years. Concurrent with the program efforts, all cost effective measures are proposed as code adoption through the Building Code Council of Washington.

Push / Pull Balance in Marketing Strategy

The “push” elements in an overall marketing strategy are either government or industry standards that determine product characteristics and availability. Codes, ordinances or manufacturing standards are typical instruments to “push” the market in a direction. Push elements provide a level economic “playing field” for purchasing of conservation hardware. As with the incentive levels, technical prescriptions of conservation attributes of plumbing or HVAC hardware must be closely coordinated with industry to determine appropriate technology and industry response.

The “pull” elements are incentives and program benefits that attract customers into making a conservation investment. With “push” element describing minimum performance levels, the “pull” elements can optimize market capacities with incentives and programmatic support.

Proven cost-effective hardware measures are prime candidates for promotion through “push” approaches. Marginally cost-effective measures with high-yield saving are excellent candidates for “pull” approaches.

The electric utility industry has an excellent example of the push/pull approach. Early in the 1980s, Washington State (and the region) electric utilities offered an incentive program to encourage market development of energy efficient construction in residential homes.

The Pull: This began with a demonstration program and education of the construction trades in energy efficient construction practices. After the initial demonstration programs, the electric utilities offered an incentive of offset the marginal costs of energy efficient measures in new homes. As the availability of materials and skilled trades began to dominate the market and energy codes established minimum standards, the incentives were lowered, removed or shifted to other market segments (i.e. manufactured housing).

The Push: Codes and construction standards were determined to be the most effective method of acquiring cost effective conservation with consistent application. Energy codes were incrementally applied in the 80’s and 90’s to establish baseline standards for the construction industry. This required a significant effort of coordinating with all aspects of the construction industry from the trades and materials suppliers to the contractors and developers. Ultimately for a program to be market driven, the economic factors for contractors and materials suppliers must provide equity. If one contractor is required to install conserving equipment, everyone bidding on the project must have the same performance standards.

General Comments on Current Incentive Levels

One of the most difficult aspects of setting incentive levels is involved in ensuring adequate benefit to the water system while simultaneously attempting to keep the payback period for commercial customers within two to three years. In order to maximize water savings, the utility may need to attract customers from a wide pool, including those with relatively low levels of use. These customers will provide a much lower level of savings to the utility, yet will require a much higher level of incentives in order to stay with in the two- to three-year payback period.

In the case of commercial toilets, in order to generate significant savings the incentive levels may need to attract broader target markets. This should draw interest not only from the restaurant and entertainment segment, where savings of 40 gpd or more are common, but also

from the office and health segments, where average savings per toilet are closer to 20 gpd. Savings of 20 gpd will only generate water and sewer savings to an average customer of around \$50 per year. Assuming a replacement cost of \$300 per toilet, an incentive level of around \$150 per toilet would be necessary for a three-year payback for the customer. However, this high of a level may make the program non-cost effective to the utility.

With moderate cost, moderate volume retrofits, such as with ice machines, a multi-tiered incentive system may be used, with incentive levels based on capacity of the equipment. Current levels of incentives for ice machines appear to be effective. For high-efficiency coin-op washing machines, a two-tier system may need to be established if this program is expanded to multi-family housing, with laundromats receiving a higher incentive level than multifamily housing, reflecting a higher anticipated level of use. A single incentive level for cooling tower conductivity controllers, in the neighborhood of \$500 per unit appears to have worked for other utilities.

In the case of more complex projects, including single-pass HVAC systems, incentive levels may continue be computed on a case-by-case basis, as has been done under the WaterSmart Technology Program. However, an additional problem with these systems occurs when a tenant, such as a retailer, is responsible for the utility bills. The tenant may feel that even a three-year payback is too long. In this case, it could be helpful if the utility could guarantee financing, perhaps through a participating bank, so the tenant could participate at no additional cost, with savings equal to or greater than the repayment cost.

Evaluation of Incentive Impacts

Evaluating the impacts of incentives on market penetration and sustainability is essential to market transformation. The evaluation must answer the question, “Will particular conservation technologies continue in the marketplace in absence of utility program support or intervention?” Ultimately, conservation is embodied in the notion of resource efficiency, and whether or not a community is using water resources efficiently as an industry and societal norm. Both process and impact evaluation must be used as calibrating tools to determine if incentives are having the desired effect in the market.

4.5 Recommendations for Long-Term Delivery Mechanisms

We recommend a long-term delivery strategy that involves:

1. Developing partnerships with other agencies, associations, vendors and businesses.
2. Developing long-term client relationships with major public, private and non-profit customers and obtaining long-term commitments to conservation.
3. Developing an efficient vendor-driven promotion and fulfillment system for industry standard improvements.
4. Promoting market transformation through support of innovative water conserving technologies in key areas.

1. Partnerships

Saving water in the Seattle Public Utilities (SPU) service area demands a collaborative approach of partnerships among organizations and agencies that supply, use and/or conserve resources. Fortunately, many stakeholders already have conservation goals as part of their

mission and can be approached to move a progressive agenda of water conservation in the commercial/industrial sector ahead.

Government Agencies & Entities

Developing and strengthening partnerships among appropriate government agencies will further water conservation by eliminating duplication of efforts, creating a united front and better impression among commercial and industrial customers, and sharing resources. Working together, agencies have a better chance of accomplishing objectives that alone can cost too much money, require more staff than is available and sharing experience, expertise and contacts. It is important to note that this sector is among the highest users of water for Seattle Public Utilities. Over 40 percent of the largest 100 users of water for SPU are from this sector.

Issues that may need to be addressed upfront in forming partnerships with other agencies may include financial concerns, liability and follow through on commitments.

Associations & Organizations

Partnerships established with associations and organizations serving the commercial and industrial sector can bring new contacts, resources and approaches to SPU's conservation program. Associations and organizations with membership usually are trusted and respected by their members. Their endorsement of SPU's water conservation goals can only serve to strengthen the credibility and perceived viability of the 1% Water Conservation program.

Environmental Organizations & Entities

Collaborating with environmental organizations can help SPU by bringing to bear the urgency of protecting natural resources in the Northwest. Many environmental groups also have some businesses that are supportive of their work, which can be tapped as allies for water conservation.

Commercial/Industrial Customers

Creating working partnerships with key, highly visible and respected customers also can increase the 1% Water Conservation program's credibility and heighten the interest of other customers in giving water conservation measures a try.

2. Long-term Relationships with Major Clients

It may not be unreasonable to expect that 70 to 80 percent of total water savings from the commercial/industrial sector could end up being attributable to a relatively small number of major customers. To ensure long-term success, the program needs to be managed in such a way as to ensure the development of long-term relationships with a relatively small list of high priority long-term partner/clients.

These high-priority, long-term relationships should include:

- Public entities
- Private and non-profit care facilities
- Large private and non-profit recreation and entertainment facilities
- Real estate management concerns with interests in multi-family housing and office space

It is suggested that these long-term customers be provided with free water use audits, for both indoor and outdoor use, with regular follow-ups. Major entities in each of these areas should

be encouraged to develop long term plans for staged implementation, often covering multiple locations.

These entities typically may be willing to accept longer paybacks than smaller customers. These entities are also quite reasonably distributed between purveyor and SPU service areas.

Long-term client relationships should be tracked and managed on a sector-by-sector basis to ensure that the program consistently meets program requirements. These requirements, as set forth in “1% Program, Program Implementation and Delivery Considerations” include the following:

- Recognize purveyor equity issues.
- Balance among customer classes.
- Utilize stakeholder partnerships to achieve goals.

This long-term orientation is critical to ensuring that the 1% Water Conservation program does not follow the “boom and bust” cycle that has been typical of so many, if not most, public resource conservation programs.

3. Vendor-Supported Promotion and Delivery

An efficient system that empowers vendors to actively promote industry standard upgrades is key to operating a low cost, reliable program. Such a system may be modeled after the successful San Diego County Water Authority Voucher Incentive Program. For more information on this program, we suggest looking at the *Program Fiscal Year 1999 Final Report*, prepared by Honeywell Services, Inc.

This type of program should work well for the issuance of standard incentives for items such as:

- Toilets and urinals
- High-efficiency washers
- Ice machines
- Cooling-tower conductivity controllers

In addition partnerships with vendors and equipment service companies for medical/dental equipment and HVAC equipment should be developed. These companies should be empowered to evaluate and apply for variable incentives to replace single pass vacuum pumps and air conditioning systems for their clients.

Such a vendor-driven system would facilitate cost-effective promotion and delivery of these standard upgrades to a wide variety of businesses, both large and small.

4. Support of Key Innovative Water Conserving Technologies

Program staff should identify key innovative water conserving technologies which could be tested and demonstrated at large manufacturers and processors, using 50,000 gpd or more. Funding would be on a case-by-case basis, consistent with guidelines established for the existing WaterSmart Program. The aim of this effort should be to pilot use of proven technology in innovative water conserving applications, and then encourage the vendors of this type of equipment to promote their equipment to this broader audience, including in both larger and smaller applications.

Suggested key technologies include:

- On-site process water reclamation and reuse

- Chemical substitution (such as with ozone) to lower rinsing requirements and prevent pollution
- Water-efficient rinsing and cleaning methods

Through its WaterSmart Technology Program, SPU and the purveyor partners have already demonstrated significant potential in each of the above areas. Other key areas may also be identified over time.

4.6 Recommendations for Short-Term Delivery Mechanisms

The short-term delivery strategy should key in on portions of the long-term strategy that can be accomplished in the first one to two years of the 1% Water Conservation program. These recommendations are explored more fully in Chapter 6, the outreach strategy.

Within the first one to two years, the following strategy recommendations are made:

1. Partnerships

Forming a partnership of organizations will increase the ability to improve program design, outreach, coordination and funding. We recommend convening a “summit” meeting of potential partners in December 2000. The summit will involve group goal setting and development of action plan that identifies a role for each of the organizations. The objective is to provide partners an opportunity to contribute their strong suits to the water efficiency efforts in the SPU service area.

As a first step, the consultants should identify a lead contact person at each organization and then a partnership committee, initiated by SPU, should be formed. **Key organizations to focus on for the first year include:**

- Seattle City Light
- King County Metro and DNR
- Department of Ecology
- Puget Sound Energy

2. Long-term Major Client Relationships

Obtain commitments to co-operatively develop long-term water conservation plans from many of the primary water users in the area, at a minimum including:

- University of Washington
- Port of Seattle
- King County Metropolitan Services
- Municipal and county parks departments
- Local school districts
- Seattle and King County Housing Authorities

Refer to Chapter 6 for more detail on recommended partnership opportunities. Additionally, we recommend developing a working relationship with a number of significant real estate management entities from outside SPU territory. Provide indoor and outdoor water audits with follow-up support.

3. Efficient Vendor-Supported Promotion and Delivery

Involve vendors in broad promotion of an incentive program for:

- Toilet and urinal replacement
- High-efficiency washing machines
- Cooling tower conductivity controllers
- Replacement of water-cooled ice machines
- Replacement of single-pass HVAC and medical equipment
- Improved control of irrigation

Develop fact sheets and case studies for use by vendors for promotion of the 1% Water Conservation Program.

4. Support of Key Innovative Water Conserving Technologies

Support efforts of vendors to market water-conserving equipment of types previously piloted under the WaterSmart Technology Program. Develop case studies for this equipment. Short-term targets for innovative technologies include:

- Process water recycling, filtration, and chemical substitution for commercial laundries and other industrial processes.
- Improved rinsing and washing for food and beverage processors and other industrial applications.

4.7 Measure Marketing Options

The following groups and priority measures are important to consider in the delivery and outreach phases of the commercial / industrial conservation program.

Standard Measures with Potential for High Vendor Involvement

(Industry Standard & Proven)

- Toilet and urinal replacement
- Single-pass air conditioning retrofits
- Single-pass ice machines and refrigeration
- High-efficiency washers
- Cooling-tower conductivity controllers
- Vacuum pumps (medical/dental equipment retrofits)
- Irrigation performance improvements

Innovative Measures with Broad Potential Application

(End Use Transformation & Innovation)

- Process water recycle
- Recycle laundry washwater
- Improve control of process water
- LEED (Green Building) incentives for new construction

5. Outreach Strategies to Recruit Business Participation

The outreach strategies in this chapter have been developed with input from commercial and industrial customers, Seattle Public Utilities and other organizations. The strategies reach beyond obvious methods such as publicity and on-site visits on the part of water utilities, to include recommendations for involving key organizations that have contact with, and potentially influence upon, commercial and industrial customers.

This section begins by establishing the framework for outreach at various levels, and then focuses on specific outreach strategies for key customer segments and partners. Specific outreach activities to be carried out by the consultant team are described in Chapter 7 “Action Plan.”

5.1 Framework for Outreach: Partnerships and Coordination

Regional Level Framework

To achieve the goals of a one percent annual reduction in water use, water utilities need to coordinate and collaborate with one another, as well as with other agencies, businesses and organizations to create and facilitate a strategic framework to deliver water conservation to the commercial and industrial sectors. One of the key elements of such a framework will be a coordinated outreach strategy.

The consultant team suggests that coordination and collaboration for outreach on the 1% Water Conservation occur under the responsibility of 1% Commercial / Industrial Work Group. Table 7 lists the types of partnership potentials. This framework will facilitate multi-sector collaboration/partnerships and increase the chances of sustainable water conservation for water utilities. It also allows water utilities to leverage resources of other organizations for their water conservation efforts. Especially important are intra-industry relations, involving organizations such as Puget Sound Energy and Seattle City Light.

Leveraging Partner Resources

Many partners listed in Table 7 already are working with the commercial/industrial customer segments identified as priority targets for 1% Water Conservation. Following are specific steps and suggestions water utilities can use to leverage the resources of potential partners.

- **Other organizations as delivery vehicles.** Since a number of organizations are already working with targeted customers, water utilities should use these organizations as a vehicle to deliver water conservation audits, materials and conservation measures for a fee that is incremental to their existing programs. One example is Puget Sound Energy (PSE). PSE has existing relationships with the same customers of many of SPU’s purveyors. They have existing programs on both their regulated and unregulated side of their utility that provide audits and measures to commercial and industrial customers. SPU/Purveyors could enter into a memorandum of understanding and sub-contract with

PSE to market the 1% program at the same time. This would involve conducting water audits, arranging for measure installation, and providing water conservation education. Since the first costs (the most expensive costs) are already born by PSE to be on site with these customers, SPU/Purveyors could negotiate to pay the incremental costs of adding these additional tasks as mentioned above.

- **Publicity through partners.** Most potential partners have newsletters or other publications for their employees, members or customers that water utilities could use to promote 1% Water Conservation and recruit customers. Refer to Section 6.3, which explains more about publicity tools such as newsletters for more on how to accomplish this.
- **Recruit partners for steering committee.** Water utilities could ask partners to serve on a steering committee to advise the utility on successful strategies and to assist in implementation. The committee could be called Partners in Conservation. In addition to the need for a SPU and purveyor service area wide committee, each water utility could benefit by having a good mix of its commercial and industrial customers directly advise their water utility. This would address issues unique to the utility and provide for very specific strategies and methods.
- **Clear and timely communications with local water utilities.** The 1% Water Conservation Commercial/Industrial Work Group should establish a method of communicating important information about water conservation in the commercial/industrial sector back to individual purveyors, especially those lacking resources for water conservation staff. Ideally, a member of the work group should be identified as the purveyor liaison. This person would be responsible for communicating important information to purveyors via purveyor committees organized by SPU, The Leak newsletter and web site and, when necessary, memos and phone calls.
- **Local awards.** Although award programs abound in the Seattle-King County area, discussions with various award program managers shows that businesses are motivated by recognition. Each utility could establish an awards program as an incentive and to provide recognition to those customers showing impressive results. The Business and Industry Resource Venture (BIRV), a program of the Seattle Chamber of Commerce, is establishing an awards program under contract with SPU. Local water utilities could either model their awards program after the BIRV awards, or partner with the program. In addition, SPU and BIRV could work with key associations to encourage them to recognize their members' conservation achievements. BIRV and SPU could provide nominations to these associations in order to kick-start the process.
- **Identify in-kind resources and services.** Develop a list of business partners who are willing to leverage their resources to help with water conservation outreach. Involving customers in this way will, over time, increase interest in and ownership of the water conservation program. For example:
 - A restaurant could host a lunch meeting.
 - A hotel could provide a free room to the recipient of a water conservation award.
 - Other in-kind services provided by partners to meet the goals of the water utility.
- **Partners lend name recognition.** Request that partners lend their name to a full-page advertisement of the 1% Water Conservation program in local papers.

Table 7. Potential Partner Categories

Partner Type	Main Activity (What they do)	Partnership Role (What they may contribute)
Associations	<ul style="list-style-type: none"> ▪ Provide member services targeted to help members be better informed and operate more efficiently and competitively. ▪ Most information is conveyed through meetings, newsletters and conferences. ▪ Services provided to members ranges from information and education to award and business referrals. 	<ul style="list-style-type: none"> ▪ Convey water conservation information to their members. ▪ Provide a forum to speak about water conservation ▪ Provide endorsements of programs. ▪ Publicity
Priority Commercial / Industrial Customers	<ul style="list-style-type: none"> ▪ Varied 	<ul style="list-style-type: none"> ▪ Lend their name for visibility of water conservation that may carry over to their peer businesses.
State and Federal Government Agencies	<ul style="list-style-type: none"> ▪ Regulate quality and quantity of water used by large businesses. ▪ Environmental protection planning and support. ▪ Educational activities. ▪ Technical and financial assistance. 	<ul style="list-style-type: none"> ▪ Through government policies and activities, agencies can promote and support conservation.
Elected Officials	<ul style="list-style-type: none"> ▪ Provide leadership on environmental issues. 	<ul style="list-style-type: none"> ▪ Political support and media exposure for water conservation ▪ Serve as catalysts for action.
Local Government Agencies	<ul style="list-style-type: none"> ▪ Education and outreach (including awards) ▪ Technical and financial assistance ▪ Market conservation programs to customers. 	<ul style="list-style-type: none"> ▪ Provide conservation information. ▪ Include water conservation in award and recognition programs.
Nonprofit groups (NGOs)	<ul style="list-style-type: none"> ▪ Education ▪ Outreach ▪ Serve as watchdog on environmental issues 	<ul style="list-style-type: none"> ▪ Provide support and recognition that this issue is critical to the environment and is good public policy.
Energy Utilities	<ul style="list-style-type: none"> ▪ Provide electric and gas services to customers of Puget Sound area. ▪ Outreach and education on energy conservation. 	<ul style="list-style-type: none"> ▪ Working with same customers as SPU for energy conservation. ▪ Resource Conservation Manager (RCM) support group and network. ▪ On-site visits. ▪ Provide information on water conservation. ▪ Could fund an incremental cost of PSE water conservation audits and measures as they have incurred first costs already of

Partner Type	Main Activity (What they do)	Partnership Role (What they may contribute)
		being on site.
Water Suppliers	Provide water to customers in the King County area.	Outreach Education On-site visits
Vendors	Market and distribute water-related equipment to customers	Marketing

Strategies for Developing Partnerships

Two immediate strategies are recommended to develop partnerships:

- 1) Develop partnerships with key agencies and organizations to help leverage resources and coordinate efforts on water conservation outreach.
- 2) Develop relationships with relevant associations that can provide peer education to businesses.

1) Develop Partnerships with Key Organizations and Agencies

As recommended in the delivery strategy, the water utilities should develop partnerships with public and private organizations and agencies. It is important to gain the participation of the following organizations as partners:

Associations

- Apartment Association of Seattle & King County
- ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers)
- Associated General Contractors of Washington
- Association for Facilities Engineering
- Association of Higher Education Facilities Officers
- Bellevue Chamber of Commerce
- BOMA Seattle-King County (Building Owners and Managers Association)
- IFMA-Seattle (International Facility Management Association)
- International Association of Plumbing and Mechanical Officials (NW Washington Chapter)
- National Association of Industrial and Office Properties (NAIOP-WA)
- Plumbing-Heating-Cooling Contractors Association
- Seattle Chamber of Commerce
- Washington Education Association
- Washington Restaurant Association
- Washington State Hospital Association
- Western Washington Golf Course Superintendents Association
- Washington Association of School Business Officials

Commercial / Industrial Customers

- Seattle School District
- University of Washington

- Evergreen Hospital
- King County Metropolitan Services
- Municipal and county parks departments
- Local school districts

State Government Agencies

- State Department of Ecology
- General Administration Plants Operators Support Consortium

Elected Officials

- Seattle Mayor
- Seattle Deputy Mayor
- King County Executive
- King County Council

Federal Government Agencies

- EPA, Region 10
- National Marine Fisheries Service

Local Government Agencies

- King County Metro and DNR
- King County Solid Waste Division
- Port of Seattle
- Seattle Parks Department
- Seattle and King County Housing Authorities
- Seattle City Light

Nonprofit Groups

- Center for Environmental Law and Policy
- Pacific Northwest Pollution Prevention Resource Center

Utilities

- Puget Sound Energy
- Seattle City Light

Vendors

- Equipment vendors
- Installation and maintenance contractors
- Performance contractors

How to Initiate Partnerships

The first step in developing partnerships should involve convening a summit meeting of potential partners in February 2000. The summit will involve group goal setting and development of an action plan that identifies a role for each of the organizations. The objective is to provide partners an opportunity to contribute their strong suits to the water-efficiency efforts in the regional water service area. Each partner also should be asked to participate in the Partners for Conservation steering committee.

The consultant team will facilitate this meeting. Aside from the key SPU staff, a few SPU Conservation Committee selected members, and the consultant team, it is recommended to have approximately fifteen other key stakeholders on the committee. Suggested participants include representatives from the organizations listed above. Details of the summit, including an agenda and invitees, can be found in Chapter 7 “Action Plan.”

How to Maintain Partnerships

Recruiting organizations and agencies that agree to partner with SPU is one thing. Ensuring follow through on commitments and maintaining (and building on) partnership agreements is entirely another matter. Water utilities will need to nurture partnerships and make partners feel that their contributions are worthwhile – both to them and their “customers.” The consultant team recommends that SPU undertake some of the following types of activities to maintain partnerships.

- **Communication.** Establish a way to provide consistent and timely information to and from partners. One way to do this is through the Partners in Conservation steering committee. Although this may require dedicated staff time at SPU, the resulting partnerships will make it worth the commitment.
- **Reciprocity.** Let partners know it’s a two-way street, and that SPU is willing to give as well as receive assistance. Where partners agree to work water conservation into their outreach activities, perhaps SPU can work energy conservation (or some other issue) into its outreach activities.
- **Recognition.** Provide recognition, and possibly awards, for partners who are helping SPU and water utilities meet 1% Water Conservation goals.

2. Outreach to Associations

The consultant team recommends placing special emphasis on outreach to associations. These organizations are often the first place commercial and industrial customers look for how to effectively run their businesses. Information provided by or endorsed by an association has credibility of that peer group. Associations to be targeted are listed in Table 9.

Active participation in associations will be very important to the success of 1% Water Conservation. Through these organizations, utilities can keep in touch with their customers and sometimes government officials as well. Water conservation goals can be explained in a friendly and credible atmosphere.

Process Template for Outreach to Associations

This process template is designed as a step-by-step approach for working with associations beneficial to the goals of the regional 1% Conservation program. It is intended as a tool to provide momentum for water utilities to successfully interact in this arena. The user should modify this process to meet their personal style and unique circumstances that arise.

- (1) Identify the association to be called and determine whether any of their members are making positive strides for water conservation. Be prepared to demonstrate the relevance of water conservation to association leadership.
- (2) Call the executive director of the association.
- (3) Briefly discuss the goals of 1% Water Conservation and ask if you may make a brief presentation at the next association meeting.
- (4) If possible, use a PowerPoint presentation and bring handouts. Let the audience know you will be around at the next break to talk to anyone interested in this topic. Make sure your handouts provide your contact information. Spend some extra time right before and after the association presentation in order to do networking.
- (5) Get list of attendees attending the meeting or conference, and/or an association membership directory so you may contact them individually if necessary.
- (6) Recruit the association contact person as a member of the Partners in Conservation steering committee.

Water District / City Level Framework

At the local level, water providers - including Seattle Public Utilities - can strengthen coordination and collaboration with their commitment to integrate regional outreach strategies into their local programs. For example, Seattle Public Utilities is integrating 1% Water Conservation into its existing WaterSmart Technology Program.

The local water utility can be the catalyst for action and as such should:

- Develop and maintain partnerships with and commitments from customers.
- Promote awareness of the 1% Water Conservation program
- Rely on the regional outreach framework, such as partnerships with vendors and agencies, in conducting water conservation outreach.

5.2 CUSTOMER SERVICE MARKETING FROM THE WATER UTILITIES

To achieve the maximum savings, water utilities should target outreach efforts to ensure the participation of high peak season users within each market segment. These customers have the highest potential savings and may serve as the best examples for case studies.

A Marketing Force within the Water Utility

To guarantee participation, SPU should employ some form of an “Account Executive” structure to ensure personal contact and timely, consistent follow-up with customers. Ideally, this should take the form of a sales and marketing team, whose members are assigned specific clients for marketing and tailoring conservation programs to fit client needs. Because SPU and local water utilities at this time do not all have the resources to increase their staffing levels, it is recommended that SPU consider the following options:

- Identify existing staff members currently assigned to water programs and assign each of them to work with three large water users within a specific priority sector. With each staff person committing six hours per week to outreach and delivery with these clients, significant progress could be made over the course of a year. Where possible, local water utilities should also identify an account executive to work with their clients. Upfront training of these staff to familiarize them with their market segment and to provide marketing skills is highly recommended.
- Hire additional consultants.
- Make extensive outreach and program delivery part of the Business and Industry Resource Venture’s contract (to a greater degree than it already is).
- Identify and train conservation staff from other agencies and utilities that are working with some of the same clients SPU and local water utilities would like to target. Examples include Seattle City Light, King County Metro and Puget Sound Energy. These conservation staff could then provide outreach on water conservation to priority customers, augmenting marketing efforts by water utilities and the BIRV.

Role of the Account Executive:

- Be responsible for delivering water conservation measures to target customers, focusing on high water users a priority market segment.

- Maintain and develop relationships with senior levels of customer management and facilities operators, facilitate resolution of customer concerns and needs with regard to water conservation.
- Understand the customer's business and management processes to recommend products and services that best meet the client's unique needs.
- Develop and document effective strategies to recruit new customers in target market segment.
- Identify and determine the customer's requirements, needs and objectives, and coordinate referrals to organizations, consultants or vendors that can best meet their requirements.
- Look for opportunities to enhance program market penetration by enlisting joint efforts with potential partnering organizations, such as other agencies, associations and vendors.
- Provide feedback to SPU and local water utilities and keep communications with partner organization open.
- Identify opportunities for publicity and recognition of customers showing impressive water conservation results.

Developing Great Customer Service

Several factors play into a customer's decision to conserve or not conserve water, such as budget and company commitment. But an often overlooked and very important factor that can convince a doubtful customer to participate in water conservation is whether they receive the service they want and if they are treated well by water utility staff and their representatives. The perception of service is real to customers. However, the perception often has less to do with technical skills than with the utility staff's personalities and the quality of the services offered.

Following are some tips for developing customer service that gets results. They are based on recommendations from the Facilities Management Link (www.fmlink.com).

- Water utility representatives should remain patient, courteous and diplomatic with customers, whose demands may occasionally border on the outrageous (free audits with no commitment for follow-through, as an example).
- To the greatest extent possible, try to appreciate the customer's point of view. Do some homework or research before important meetings.
- Be prepared to occasionally receive the cold shoulder and to be put on the defensive about the need for water conservation, but handle them without being defensive.
- Be clear about the water utility's capabilities, and be realistic in the commitments made on behalf of the utility. It would be worse to promise something the utility cannot follow-through on than to not make any commitments.
- Make the utility's goals and services very clear to the customers.
- Remember that utility representatives may become the guardian of highly sensitive information. They should keep it confidential.

The Marketing Approach

The following elements are important for comprehensive outreach to customers.

Table 12 indicates which consultants or organizations may be used as vehicles for various marketing elements.

On-site consultations and visits

The most important aspect of marketing water conservation in a way that results in business participation will be direct contact with customers. Water utilities can use media and advertisements to establish program recognition and credibility, but personal contact by Account Executive personnel can market with high motivational impact program packages and collateral program benefits. Follow-up and customer feedback can assist the Account Executive in refining program elements.

Publicity

Media

Good media relations and press coverage are extremely important to water conservation. The press, especially business journals, is influential with the business community. The attitude of columnists and editorial boards toward the goals of 1% Water Conservation will play an important role in the perceived importance and urgency of this initiative. Ideally, a press packet for commercial/industrial 1% Water Conservation should be prepared and regularly updated. Such a press packet could include a press release, case studies, contact information and a map of the service area. Business and utility leaders who are willing and available for media contact should be identified and listed.

Newsletters*

Newsletters produced by organizations and associations are important for reaching customers directly with information and tools for conserving water.

Utility newsletters and bill inserts

Most utilities produce an insert or newsletter to accompany their water bills. Although these do not always make it into the hands of facility managers and decision makers, they are important communications vehicles. In addition, a well-developed insert featuring specific water technologies or resources could also be distributed by vendors in their billings to customers.

Award programs

Award programs are offered by numerous local, state and federal agencies and can provide a valuable method of recognition for businesses.

Peer education

Outreach to associations*

Education through partner organizations

Educational and resource materials

Technical fact sheets*

Fact sheets are a simple way of getting information about water conservation into the hands of customers and vendors. Because customers have indicated a need for how-to and technological information, we are recommending that the first fact sheets developed focus on specific water-use equipment in the commercial/industrial sector.

Case studies*

A set of case studies that could be provided to customers, media and others is not only useful, but essential. Most customers are eager to hear how other facilities similar to their have dealt with water conservation, and will convey the message that "it can be done and here's how." Case studies take water conservation from theory to reality.

Web-based information*

Developing and maintaining a web site filled with resources and tools for water conservation will serve as an important method of communicating information to customers, vendors and consultants who work with both customers and vendors.

Marketing brochure*

Utility staff and vendors need a persuasive brochure that can be distributed to customers along with an initial site visit. Many customers don't follow through with water conservation because they aren't convinced of the reasons to do it or because they don't have the time or interest in hunting down resources for getting the job done. The brochure should be focus on motivating a customer to take action, by providing information on benefits and listing resources and steps to take for water conservation. The brochure should help increase follow through by customers.

Poster for employees and management

Water conservation that happens through retrofits and upgrades in equipment can easily be undone by employees who don't change their behaviors to conserve water. Often water conservation doesn't happen because management don't consider water to be an issue. Posters that can be placed throughout a company's facilities will help facility managers in their efforts to conserve water.

Resource guide*

In an effort to make it easier for customers to follow through with utility recommendations for water conservation, a resource guide should be developed that lists pertinent contacts for associations, vendors, consultants, utility staff and other agencies.

Table 12. Marketing elements and potential delivery vehicles

= Delivery capability = Development capability

	Watermark Consultant Team	BIRV	SPU	Local Water Utilities	Partner Orgs	Vendors
On-site consultations						
Media publicity						
Award Pgms.						
Newsletter articles						
Outreach to associations						
Fact sheets						
Case studies						
Web-based information						
Marketing brochure						
Posters						
Resource guide						
Utility bill inserts						

Maintaining Utility Visibility in the Business Community

- Send a welcome letter to new commercial/industrial customers, providing information about 1% Water Conservation.
- Encourage utility staff to participate in civic groups, such as Rotary Clubs.
- Periodically survey commercial/industrial sector opinions by an independent firm.
- Determine specific needs of customer segments and develop utility-sponsored programs or workshops to meet those needs.
- Keep ahead of technological developments affecting water conservation, and make sure the commercial/industrial customers are aware of your efforts (the time, money and energy invested in research and development).
- Ensure that city facilities are leading the 1% Water Conservation effort.

5.3 Outreach and Recruitment Strategies for Specific Market Segments

Framework for Outreach at the Customer Level

Developing Long-Term Relationships with Major Customers

Each year of the 1% Water Conservation program, SPU should identify six to eight large customers to work with very intensively, in order to develop long-term relationships. Local water utilities should identify as least one customer in their service area to work with each year. These customers can be identified based on water use and potential savings, and by contacting partner agencies and organizations to find out which large customers are primed for water conservation. Table 10 recommends customers in each of the priority customer segments that SPU could choose to focus on in the first year of 1% Water Conservation.

A Process Template for Developing Relationships

1. Identify the contact person at the large customer facility, usually the facilities manager or plant manager. The contact database developed by the consultant team provides information on selected commercial/industrial customers.
2. Call and introduce yourself and the 1% Conservation program, and ask if you could set up an appointment to provide a free water audit of their facility. If able to set up an audit go to step 3. If not, go to step 6.
3. During the audit try to gather information about budgetary and organizational factors that would allow a customer to implement water conservation actions, such as having extra money available at the end of each biennium, or projects with collateral benefits (like energy savings) being a higher priority, etc. Identify obstacles and opportunities. Bring along communications materials for the customer.
4. Once the audit is completed, you will potentially recommend measures that are tailored to that customer's needs. Set up an exit interview that includes key decision-makers. Discuss the benefits, both financially and environmentally (see list of benefits in the chapter on research) and leave them material about incentives, vendors and other programmatic opportunities to get the measures installed.
5. FOLLOW UP with phone contact two weeks after the visit to get a commitment for action.
6. Follow up and check in on an ongoing basis. Find out if the customer would like to be notified of future savings opportunities, such as new rebates, etc.
7. Try to involve them in utility advisory committees, and other participatory mechanisms.
8. Update the contact list with changing or expanded personnel information

Help for Facility Managers

Water utilities should develop and provide information to help potentially reluctant facility managers as they consider water conservation. Materials provided should communicate that²:

- (1) **To change water use, facility managers should first know their water use.**

² Adapted from BOMI Institute's *Technologies for Facilities Management* course, (www.bomi.edu.org/13041.html), a required course in BOMI Institute's *Facilities Management Administrator (FMA)* program.

Without knowing how, when and where water is used, there is no way to gauge the relative importance of water management projects. Identifying and tracking water use patterns is the first step in any conservation program.

(2) Initial conservation efforts need not always entail expensive equipment.

Sometimes, more water savings may be obtained by simply controlling a system's water use than by installing more efficient components.

Most successful water management programs usually are found in the best-managed and maintained facilities, not in those with the greatest quantity of technological equipment.

(3) Don't underestimate the importance of maintenance.

Good maintenance practices and good water management go hand-in-hand. Some of the highest rates of return on conservation can be generated simply by performing maintenance.

Emphasis should be on preventive maintenance is still critical - reactive maintenance (waiting for a crisis to occur) is not wise, despite funding limitations. No amount of technology will obviate the need for regular care or compensate for its absence.

In addition, water utilities should encourage facility managers make water conservation a company policy by:

- Providing materials to help educate employees about the importance and benefits of water.
- Creating water conservation suggestion boxes, and placing them in prominent areas.
- Installing signs in restrooms, and display information in public areas, encouraging water conservation.
- Assigning an employee to evaluate water conservation opportunities and effectiveness.

Successful outreach to each of the market segments will have some elements in common and others unique to the segment. For example:

Elements in common:

- Facilities management and operations and maintenance staff
- Domestic usage

Outreach efforts for *common elements* should focus on operation and maintenance trade associations and publications for programmatic inclusions in career develop programs and/or co-sponsorship of training opportunities. For example, the Building Operator Certification program, or the Northwest Building Operators Association.

Elements unique:

- Organizational management structure
- Client service
- Facility structure and nature
- Professional and business affiliations

Outreach efforts for *unique elements* should center efforts on niche areas specific to the market segments. For example, Health Care Facility Engineers (hospitals), or the Washington Association of Maintenance and Operations Administrators (schools).

Priority Customer Segments and Outreach Strategies

1. Hospitality, Entertainment, Recreation & Religious

Segment Background

Hotels and restaurants (with many hotels also housing food facilities) are the primary customers in the hospitality segment. Restaurants use an average of close to 6,000 gallons of water per day, with 50 percent of the water being used in the kitchen. About 35 percent of the water used goes to domestic water uses, such as toilets.³

Hotels average water use of more than 20,000 gallons per day. Domestic water use accounts for 40 to 60 percent of the water used in most hotels and motels. Roughly 13 percent is used for irrigation.

Segment Strategy

Provide free on-site water use audits to identify opportunities. Primary focus will be on domestic plumbing and single-pass ice machines. Secondary focus will be on cooling tower conductivity controllers and laundry water ozone and/or recycle systems. Hotel facilities will also be encouraged to offer guests the option of laundering sheets less than daily.

Target Audience

- Hotel and restaurant management
- Association marketing personnel

Approach

- For all customers, work with local chapters of industry organizations to highlight savings strategies. Make presentations to pertinent organizations and get articles printed in their newsletters.
- For large water users, develop long-term plans to upgrade wasteful equipment.
- For all customers, demonstrate low- or no-cost, behavioral changes that will save water in kitchens, such as pre-soaking utensils and dishes in basins of water, rather than running water; not using running water to melt ice or defrost frozen products. Feature these in printed materials that can be distributed by associations and vendors to customers of all sizes.
- For large water users, work directly with facility managers to help them reduce excessive blowdown in cooling towers.
- For all customers, develop and distribute fact sheets showing how to improve cooling tower efficiency.

Priority Customers

Note: customers selected based on high water use data from SPU.

- Seattle Sheraton Hotel
- Westin Hotel

³ ICI Conservation in the Tri-County Area of the SWFWMD. SWFWMD, November 1997.

- Stouffer Madison Hotel

2. Education

Segment Background

Schools, on average, use more than 22,000 gallons of water per day. The largest percentage – almost half – goes to irrigation and about one-third is used for domestic purposes, such as bathrooms.⁴

Segment Strategy

Approach educational institutions at the administration level for support and commitment to incorporate 1% Water Conservation goals into district or campus operational plans. Schools and higher education institutions operate on a biannual cycle to match the state funding allocations. Cycle program offerings to target the last year of the biennial budget cycle in order for customers to expend unused capital funds on water efficiency projects and carry forward to the new biennial cycle.

Target Audiences

- Superintendents, administrators, school presidents and school principals: Support for efficiency measures must come from a general policy and multi-year planning process to achieve sustained saving over the 20-year program cycle.
- Operation and maintenance managers, resource conservation or energy management staff.

Approach

- For large water users, identify key administrative personnel responsible for operations and capital projects for priority customers. Key personnel or champions within an educational facility are crucial to the success and sustainability of conservation efforts within an organization.
- For large water users, meet with administrators individually to outline programmatic benefits and services offered by SPU and purveyors that help to increase the quality and decrease the costs to educational institutions.
- For large water users, work with facility management and administration to develop a multi-year plan of staging conservation measures into the facilities over 20 years.
- For the universities and community colleges, develop a range of projects types that reflect a range of capital costs depending on the opportunities that are available in each of the institution.
- For all water users, develop relations with organizations and associations. Make presentations to their members and get articles printed in their newsletters.
- Utilize vendors to distribute printed materials, including fact sheets, marketing brochures and other information about utility rebates.

Priority Customers

Note: customers selected based on high water use data from SPU.

- University of Washington

⁴ ICI Conservation in the Tri-County Area of the SWFWMD. SWFWMD, November 1997

- Seattle School District
- Highline School District
- Lake Washington School District

3. Parks, Golf Courses & Cemeteries

Segment Background

Parks and golf courses use large amounts of water for irrigation purposes and reducing use can be challenging because of customer demands for green parks and courses. Larger parks often irrigate at multiple sites, making conservation more challenging. Because of the highly visible nature of their irrigation, this segment is likely to provide good partners for conservation activities and promotion.

Segment Strategy

Managing water can be a difficult task, and utilities are in a unique position to offer financial and technical assistance. Identify and contact park managers and golf course superintendents for support and commitment to incorporate water conservation goals into their operational plans. Develop relations by providing free on-site irrigation audits to identify opportunities.

Target Audience

- Facility management and engineering staff
- Grounds and landscape contractors
- Golf course superintendents

Approach

- For municipal and county park districts, and large golf courses and cemeteries to develop five-year plans for auditing major facilities and funding upgrades.
- For large water users, help managers monitor and publicize the success of water conservation efforts. Provide assist or information on reading meters and comparing usage, while factoring in weather variances.
- For all parks and golf courses, provide information via fact sheets and utility bill inserts on efficient irrigation practices involving employee behavior, such as best times for watering or washing equipment and machinery by using a hose with a shutoff nozzle.
- For all, develop relations with appropriate organizations or associations. Make presentations and provide articles for their newsletters.
- For all, distribute fact sheets on irrigation and plumbing topics via associations and vendors.

Priority Customers

Note: customers selected based on high water use data from SPU.

- Seattle Parks Department
- King County Parks
- Seattle Municipal Golf Course
- University of Washington

- Fairwood Golf & Country Club

4. Transportation, Warehousing, Communications & Utilities

Segment Background

The King County Transit Department and the Washington State Department of Transportation are in the top 27 public sector users in the SPU service area. They are characterized by many dispersed offices in both SPU and purveyor service areas.

Segment Strategy

Gain adoption of 1% Water Conservation elements into operational goals by governing commissions. Incorporate water conservation into commission (i.e., Seattle Port Commission) agendas as an “efficiency in government” planning approach.

Target Audience

- Port Commissioners and support staff
- Transportation departments of local governments

Approach

- Work with commission support staff to identify concurrent facility and environmental goals that can be added to 1% Water Conservation goals.
- Publicize participation and public resource stewardship of agencies.
- Based on the assessment of saving for the institution, work with governing executives and commissions to set annual consumption goals and reductions.

Priority Customers

Note: customers selected based on high water use data from SPU.

- Port of Seattle
- AMTRAK
- King County Metro
- Washington State Ferries
- Washington State Department of Transportation Facilities

5. Multifamily and Coin-op Laundry

Segment Background

Multifamily housing, such as apartment complexes, can be approached both from the residential and commercial conservation side. How tenants use water is more residential in nature, whereas the equipment (toilets, laundry, irrigation) are considered to be commercial in nature. The key areas for conservation in this segment will include laundry facilities and irrigation. Also key will be the replacement of toilets and urinals with efficient equipment.

Segment Strategy

- Help property management companies install submetering systems. Submetering companies cite figures that water consumption drops from 25 to 40 percent after residents start paying for water and sewer costs directly. Property management companies usually see a payback within 18 months after installation, depending on local rates.
- Form a joint effort with county and utility programs targeting housing authorities for retrofits and new construction. Local energy utilities and housing authorities have energy conservation programs in place to reduce low-income housing costs. These programs have outreach workers who develop energy conservation packages for housing authorities. Partner with these groups and training program staff in water auditing and assessing for conservation opportunities.

Target Audiences

- Housing authority boards
- Condominium associations
- Operation and maintenance management and staff

Approach

- For large water users, assist and support training and education programs for building and grounds maintenance staff where irrigation opportunities exist.
- For all customers in this segment, emphasize award and recognition component. Market the building label award for “Green Practices” with water usage. This will likely occur in partnership with other organizations and associations.
- For all customers, provide information about irrigation and laundry rebates via vendors and associations, including their newsletters.

Priority Customers

Note: customers selected based on high water use data from SPU.

- Seattle Housing Authority
- King County Housing Authority
- Lake Washington Apartments Limited
- Seahurst Village Apartments

6. Health & Human Services

(includes hospitals, medical/dental clinics, assisted living, rehabilitation centers and prisons)

Segment Background

A written comprehensive utilities management program is a requirement to successfully operate all utilities and utility systems in a hospital, and part of this involves the management of water. This program is also mandated by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO). Utilities management program is discussed under the Environment of Care Standard in the accreditation manual for hospitals.⁵

⁵ AFE Facilities Engineering Journal, May/June 1997

On average, hospitals use more than 100,000 gallons of water per day. More than half the water is used for cooling purposes and about one-fourth for domestic uses, such as toilets.⁶

Segment Strategy

Provide free on-site water use audits to identify opportunities. Primary focus will be on domestic plumbing, single-pass ice machines, water-cooled vacuum pumps, and autoclaves. Secondary focus will be on cooling-tower conductivity controllers, laundry facilities and irrigation improvements.

Target Audience

- Hospital administrators
- Hospital plant engineering managers
- Hospital facilities managers

Approach

- At major health facilities, work with facility operations staff to identify opportunities and develop long term plans for replacement of equipment.
- For all health facilities, develop relations with appropriate associations that provide information to facility managers. Make presentations to their members and provide articles and other materials to be printed in association newsletters or mailed to members.

Priority Customers

Note: customers selected based on high water use data from SPU.

- Fred Hutchinson Cancer Center
- Evergreen Hospital
- Children's Orthopedic Hospital
- Swedish Medical Center
- VA Medical Center

7. Office and General Commercial

Segment Background

According to the National Association of Industrial and Office Properties (NAIOP), property management in cities will boom with an expected growth rate of 71 percent over the next two years. Both industrial ownership and property management will see gains of more than 20 percent in the suburbs. More than half the water used in commercial buildings goes to cooling and domestic (such as toilet) uses.⁷

Segment Strategy

Coordinate conservation delivery and marketing with other utilities and approach large commercial clients with a comprehensive package of conservation measures that has a significant and broad application.

⁶ ICI Conservation in the Tri-County Area of the SWFWMD. SWFWMD, November 1997

⁷ ICI Conservation in the Tri-County Area of the SWFWMD. SWFWMD, November 1997.

Target Audience

- Commercial facility owners and managers
- Commercial property management companies

Approach

- For large water users, develop a comprehensive package jointly with the energy, wastewater and solid waste utilities.
- For large water users, provide both technical assistance to deliver site-specific applications and training for facilities management and staff.
- For all office and general commercial customers, publicize success stories through media, award and recognition programs, associations and other avenues. Highlight opportunities for rebates.

Priority Customers

Note: customers selected based on high water use data from SPU.

- EOP – Columbia Center LLC
- Pine Street Development LLC
- WRC Management Company
- Westlake Center Association
- Skinner Mgmt. – Carillon Point

8. Manufacturing and Process

(includes food processing and warehousing and non-food manufacturing and process)

Segment Background

Most of the water used by manufacturing and process customers goes to cooling, process and treatment activities. The average manufacturing and process company uses close to 150,000 gallons of water a day.⁸

Segment Strategy

Provide free on-site water use audits to identify opportunities. Primary focus will be on process water control and recycling. Secondary focus will be on cooling tower conductivity controllers, domestic plumbing, and miscellaneous single pass use.

Target Audience

- Facility plant engineers
- Plant managers

Approach

- For large water users, work closely with facility operations staff at major manufacturing and process facilities to identify water conservation opportunities and develop long-term plans for replacement of equipment.
- For large water users, help industrial facilities assemble a team, with representatives from process engineering, environmental and facilities staff, and senior management

⁸ ICI Conservation in the Tri-County Area of the SWFWMD. SWFWMD, November 1997

to evaluate and, where feasible, plan for a wastewater-recycling system. The utility can assist in:

- For a variety of customer sizes, provide a water audit to determine the amount and quality of water entering and leaving the plant. Synthesize the audit information into a general water audit fact sheet (without revealing any company specific information) and provide the fact sheet to various size customers.
- Develop partnerships with key customers to identify and evaluate the best technologies to use for conservation (both environmentally and economically).
- For a variety of customer sizes, help prepare a payback analysis. Synthesize the payback information into a general fact sheet (without revealing any company specific information) and provide it to various size customers.
- For all customers, publicize successes and rebates via local and business newspapers and appropriate associations.

Priority Customers

Note: customers selected based on high water use data from SPU.

- James Hardie Gypsum
- Birmingham Steel Corporation
- Todd Shipyards
- Ash Grove Cement West, Inc.
- Chevron USA

5.4 Vendor-Driven Recruitment Strategies

Framework for Outreach at the Vendor Level

Setting the Stage for Vendor-Support Promotion and Delivery

Strong cooperative relationships with vendors are key to operation of a cost-effective, successful water conservation program. It is essential that, to the extent possible, this relationship be one that provides a clear incentive to motivate vendors to take initiative in promoting the program, as well as one which offers attractive enough terms to be easily marketed to their customers.

The exact nature of vendor involvement will vary both by measure and by application complexity. However, several basic principals apply:

- Vendors should be involved in preparation and/or review and verification of incentive applications.
- Program information, fact sheets, application forms and related information should be provided on the web when possible.⁹
- Incentives should be paid directly to the vendor when practical, to lower the upfront cost to the customer.
- For complex applications requiring additional design work, a portion of the incentive may be earmarked for the vendor or installer to cover design costs.

⁹ It is recommended that incentive applications be completed and verified by participating vendors through an interactive web site operated by SPU (possibly maintained for SPU by an outside consultant). Web links may be provided to participating vendors and wholesalers for product and service information. It may also be possible to forward customer requests for quotes to participating vendors.

- Vendors should sign up with SPU to receive necessary materials and be placed on an approved vendor list prior to participation in the program.
- Vendors should be provided with appropriate marketing materials, including fact sheets and case studies.

Participating vendors would be given passwords to access application forms. Customers would be required to provide their account number(s) with their water utility for confirmation of eligibility, along with other pertinent information needed for tracking purposes, as well as confirm that all other eligibility criteria are met.

Marketing and outreach efforts should be conducted through contact with vendors, trade associations for target customer segments, and through individual contacts with large users. Except in the case of complex projects, especially those involving multiple vendors, customers would be encouraged to apply through a participating vendor.

Vendor Types

There are three distinct types of vendors:

- Equipment vendors
- Installation and maintenance contractors
- Performance contractors

Additionally, design professionals such as architects and engineers may be considered vendors with services which include water audits, cost/benefit analysis, and equipment specification.

Both equipment vendors and installation and maintenance contractors may be further broken down by equipment type, including those involved with plumbing, HVAC, medical equipment, water treatment (cooling towers & boilers), ice machines, laundry equipment, restaurant equipment, irrigation, and process equipment. The line between equipment vendors and contractors is not always clear cut.

Performance contractors have historically focused more on energy but are now often including water projects as well.

Most vendors sell, service, or design both water efficient and non-efficient equipment. A vendor-oriented program will aid and empower vendors to promote water efficient services and equipment.

A vendor program may be structured either as a “vendor driven” program or as a “participating vendor” program. Both approaches should include free water audits by third party auditors funded in a manner similar to the current free irrigation audit program.

Vendor-Driven Program

Under a “vendor-driven” program, outreach to customers, completion of forms, and payment of incentives are funneled through participating vendors. For most installations with fixed incentives, oversight by SPU would be minimal, with vendors agreeing to take responsibility to ensure compliance with program requirements. For installations with variable incentives, oversight would be either by SPU or by an approved third party water auditor.

Hold vendor workshops/luncheons. Workshops may be organized geographically and/or by equipment/service type. Outreach may be done through appropriate trade organizations and Chambers of Commerce.

At the workshop explain the program and distribute informational packets with fact sheets on specific topics, case studies, application forms, and program FAQ's including what projects qualify, to whom payments are made and when, how is the incentive calculated, how are water savings calculated, and other questions. The workshops for the "Vendor Driven" program should be detailed to determine vendor qualifications and capabilities.

Participating Vendor Program

Under a "participating vendor" program, vendors would be encouraged to have representatives attend measure specific vendor workshops put on by SPU where they would be given applicable case studies, fact sheets, and application forms. Vendors represented at the workshops would then be listed on a "Participating Vendor List" which would be available on-line and in print form. This list would have a disclaimer that SPU was not endorsing or making any particular claims as to the quality of service or performance of equipment supplied by participating vendors. This list would also be distributed at subsequent Sector Workshops put on by SPU for interested customers, and by third party auditors. Vendors would be encouraged to provide customers with fact sheets, case studies, and application forms, but responsibility for submission of forms would remain with the customer. The option for the customer to assign incentive payments to a participating vendor would remain. Program oversight would be by SPU and/or approved third party auditors. It would be essential that SPU minimize the paperwork and turnaround time for processing program applicants. Prior to implementation of a "Participating Vendor" program, SPU should have a series of program development meetings with vendor representatives to aid the program design and ensure maximum vendor participation.

Customer Education & Outreach

Both programs should have customer education and outreach components. Hold sector specific and/or geographically based customer workshops. At the workshops explain the program and distribute informational packets with fact sheets on specific topics, case studies, application forms, and program FAQ's including what projects qualify, to whom payments are made and when, how is the incentive calculated, how are water savings calculated, and other questions. Distribute lists of participating vendors for each measure.

Fund free water audits for large users by approved third party auditors. Auditors may help with completion of application forms and will distribute program information including the list of participating vendors.

Fund studies of leading edge technologies and services, including maximum efficiency cooling towers, plumbing fixtures which go beyond code, and filtration systems for reuse of process water. Distribute findings to applicable vendors and customers.

Referrals to Participating Vendors

Workshop participants may have their businesses listed on a "List of Participating Vendors" and/or have links on the SPU web site listing the equipment or services they provide. Interested customers may be able to request vendor information through the links.

On-Line Support

Provide tools on the SPU website which will help vendors apply for rebates and get involved in the water conservation program. Following are some suggested items to include in the vendor section of the web site:

- Imbedded spreadsheets to aid in calculations, as well as useful conversion factors, and typical usage figures (e.g., typical flushes per day per office employee).
- Links to other tools such as the AWWA drip calculator.
- Downloadable application form as a .pdf file.
- On-line maps showing participating water utilities and corresponding sewer utilities along with contact information and rate structure.

Reaching Vendors

Methods of reaching vendors include field sales representatives, conventions, service representatives, training programs, trade journals and vendor associations. Through a variety of methods, it is important that the water utilities establish and maintain frequent and regular communications with vendors. A message from the water utilities that will catch a vendor's attention will likely be one that provides solutions to his or her needs. For example, materials that help vendors make their own repairs to equipment will satisfy vendors' customers and help vendors reduce their service costs and complaints. It is important to remember that vendors are motivated by making a profit and pleasing their customers.

Strategies for Vendor Delivery of Priority Water Measures

Listed below are several packages of water conservation measures that lend themselves well to delivery through vendors. In gearing up for such a delivery strategy, water utilities should consider providing training programs for vendors. Some manufacturers require that their dealers and service personnel attend regular training course, often offered by the manufacturer. Utility staff and equipment manufacturers or related associations could team up to provide such training.

1. Domestic Plumbing Retrofits Measure Package

Strategy

Continue to offer fixed incentives for toilets and urinals, but with no minimum requirement regarding flushes per day.

Recommended incentive levels are:

- \$60 for tank toilets
- \$120 for flushometer toilets and urinals, including waterless urinals.

Incentives for vandal resistant lavatory and room sink flow restrictors, between 1.5 and 0.5 gpm, and shower heads, 2.5 gpm or less, should be offered with all toilets and urinal incentives, at the customer's option, with an additional incentive of \$2 per restrictor and \$5 per showerhead.

Target Vendor Types:

- Plumbing equipment wholesalers/retailers
- Plumbing contractors

2. Cooling Tower Improvements Measure Package

Strategy

Offer fixed incentives of \$500 per conductivity controller installed for sump makeup water in existing cooling towers where there was either no conductivity controller or a malfunctioning controller.

Pursue cooperative agreements with energy utilities for additional funding of efficiency improvements.

Target Vendor Types:

- Cooling-tower chemical providers
- HVAC installation and service contractors
- Conductivity controller vendors

3. Single-Pass HVAC and Medical/Dental Equipment Replacement/Retrofit Measure Package

Strategy

Continue to offer variable incentives for replacement or retrofit of single pass equipment.

Target Vendor Types:

- HVAC installation and service contractors
- Medical equipment vendors

4. Single-Pass Ice Machine & Cooler Replacement/Retrofit Measure Package

Strategy

Continue to offer variable incentives for replacement or retrofit of single-pass ice machines and coolers.

Target Vendor Types:

- Refrigeration installation and service contractors
- Ice machine vendors

5. Irrigation Improvements Measure Package

Strategy:

Continue to offer variable incentives for irrigation improvements.

Target Vendor Types:

- Irrigation installation and service contractors
- Irrigation equipment vendors
- Landscape architects and contractors
- Certified irrigation auditors

6. Multifamily/Laundromat Coin-op High-Efficiency Washers Measure Package

Strategy:

Offer fixed incentives for purchase of high-efficiency for coin-op common area laundry facilities at multifamily housing and laundromats. Qualifying applications may be for both new locations and as replacements for existing low efficiency machines.

Recommended incentives per coin-op machines are a minimum of:

- \$300 for multifamily applications
- \$450 for laundromats

Target Vendor Types:

- Laundry facility service contractors
- Washing machine vendors

7. Process-Water Control/Recycle Measure Package

Strategy:

Continue to offer variable incentives for process water control and on-site process water recycling.

Target Vendor Types:

- Mechanical installation and service contractors
- Mechanical design engineers
- Vendors of equipment for spray, rinse, and water and chemical control equipment
- Vendors of filtration, water treatment and process-water recycling equipment
- Vendors of commercial laundry equipment

The How And Why Of Rebates

The following is information taken from an article titled "The How and Why of Rebates" by Henry Norr.¹⁰ It is not directly related to water conservation, however the information is useful and confirms some of what we already know about rebate statistics.

¹⁰ Norr, Henry. *The How and Why of Rebates*. The San Francisco Chronicle. December 18, 2000.

There's no mystery about why companies offer rebates. Money back in effect reduces the final purchase price, and by the normal laws of economics and consumer psychology, that should spur demand. The extra stimulus comes in handy when, as now, sales are unexpectedly slow, or sometimes when a product is new to the market, or when one vendor sees a chance to pick up some market share from competitors.

Some people entitled to rebates never collect them. Either we forget to pick up the required form at the store, or, all too often, the store is mysteriously out of the form, even though the product itself is still in plentiful supply. Or it's too much trouble to find all the serial numbers, stickers, bar codes and other items the rebate application demands. Or we just never get around to dealing with the issue until the program's expiration date has passed.

I know these are real issues from observing my own consumer behavior. I hate to think how many times I've bought something at least in part on the basis of a promised rebate, then never gotten it together to file the paperwork.

In fact, Roger Lanctot, senior director of research at PC Data, the Reston, Va., company that monitors sales at thousands of U.S. retail outlets, estimated that the usual redemption rate when a manufacturer offers a rebate of, say, \$10 or \$20 on a sub-\$100 product is somewhere between 10 and 30 percent. Naturally, he said, rates are higher when the amount is larger or when there's a "net-to-zero" offer -- a rebate that covers the full retail price of the product. (This type of rebate was common in the consumer software arena a few years ago, according to Lanctot, but most vendors have since given it up, for obvious reasons.)

But with almost every rebate program, he said, a significant percentage of buyers never applies. The industry even has a term for this phenomenon: It's called, quaintly, "breakage."

I also talked to Seymour Merrin, and he generally agreed with Lanctot's numbers. While noting that many variables affect the redemption rate, he generally recommended to clients that they plan on 30 percent to 35 percent of eligible buyers applying for their rebates -- and to hope that the actual figure would be as low as 20 or 22 percent.

BUILDING BARRIERS

Merrin also acknowledged that manufacturers don't just cross their fingers and pray for low redemption rates.

"They know very well," he said, "that participation is highly dependent on ease of participation. The more you have to cut and peel and put things together to complete the application, the fewer people will bother." Apparently there are even specific tricks known to deter consumers: "If you have to take a knife and cut through heavy cardboard (to get a bar code or proof-of-purchase seal), the rates drop precipitously," Merrin said.

Nowadays, according to Merrin, manufacturers planning rebate programs are usually careful to avoid crossing "natural" price barriers, for fear of driving prices lower than they want on a permanent basis. They learned this lesson, he said, in part from a classic case in the printer industry in the 1980s. At the time, the usual price for an office inkjet printer was in the mid-\$300s. Canon, then and now a major player in the field, charged \$349 for its mainstream model.

But then the company offered a \$50 rebate, pushing the net price below the "magic" \$300 price point. "Immediately," Merrin recalls, "they had an immense surge in sales, and all of their competitors had to respond with similar offers." But they could never go back, because "no one was willing to pay more than \$300 ever again."

The net result? "That one move took hundreds of millions of dollars of profit out of the industry," he said.

Tech21 appears every Monday in The Chronicle. Send your comments and tips to Henry Norr at hnorr@sfchronicle.com.

6. Summary of Outreach Activities

6.1 STEPS TAKEN TO KICK OFF OUTREACH STRATEGIES

From January 2001 to April 2001, the consultant team carried out selected outreach and delivery activities recommended in this report, including workshops, on-site consultations, partnership building and the development of technical assistance and educational materials. In addition, SPU has hired the Business & Industry Resource Venture (BIRV) - a program of the Seattle Chamber of Commerce - to conduct outreach on water conservation to business customers in the SPU regional customer service area. Most of the outreach strategies contained in this report will be carried out by the BIRV and SPU, with additional support provided by consultants when needed. This section summarizes the activities conducted and materials developed by the consultant team as part of this contract.

6.2 PARTNERSHIPS IN CONSERVATION OUTREACH FOR THE COMMERCIAL / INDUSTRIAL SECTOR

The consultants developed and conducted a half-day outreach gathering to initiate partnerships that will leverage resources for water utilities in their efforts to deliver and market water conservation to commercial/industrial customers. The meeting was very successful with almost everyone invited attending. Discussions are continuing among participants and two business workshops were initiated from this meeting. Following is a summary of the February 15th meeting and a list of participants.

Meeting Participants

- **Business & Industry Resource Venture**
 - } Bill Anderson
1301 5th Ave., Suite 2400
Seattle, WA 98101-2611
206-389-7303
bill@seattlechamber.com
www.resourceventure.org

- **City of Bellevue**
 - } Vikki Van Duyne
City of Bellevue Water Utility
P.O. Box 90012
Bellevue, WA 98009-9012
425-452-7103
vvanduyne@ci.bellevue.wa.us
www.ci.bellevue.wa.us/Utilities/default.htm

- **ECOSS (Environmental Coalition of South Seattle)**
 - } Charlie Cunniff, Director
8201 10th Avenue South

Seattle, WA 98108
206-767-0432
charlie@ecoss.org
www.ecoss.org

▪ **GM Nameplate**

} Ken Gross, Environmental Coordinator
2040 15th Avenue West
Seattle, WA 98119
206-284-2200
Fax: 206-284-3705
keng@gmnameplate.com

▪ **King County**

} Laurel Tomchick
EnviroStars
Local Hazardous Waste Management Program
130 Nickerson Street, Suite 100
Seattle, WA 98109
206-263-3063
laurel.tomchick@metrokc.gov
www.envirostars.com

} Jeff Bowman
Industrial Waste Program
130 Nickerson Street, Suite 200
Seattle, WA 98109-1658
206-263-3071
jeff.bowman@metrokc.gov
dnr.metrokc.gov/wlr/indwaste

} Kinley Deller
Solid Waste Division / GreenWorks
King Street Center
201 S. Jackson Street, Suite 701
Seattle, WA 98104
206-296-4434
Fax: 206-296-0197
kinley.deller@metrokc.gov
www.metrokc.gov/dnr/swd/greenwrk

▪ **Lafarge Corporation**

} Russ Simonson, Environmental Engineer
5400 W. Marginal Way SW
Seattle, WA 98106
206-937-8025 x319
russ.simonson@lafargecorp.com
www.lafargecorp.com

▪ **Northshore School District**

} Terry Taylor
Support Services
18510 98th Ave. NE
Bothell, WA 98011
425-489-6383
ttaylor@nsd.org
www.nsd.org

▪ **NW Pollution Prevention Resource Center**

} Chris Wiley, Industry Outreach Lead
513 1st Ave. W
Seattle, WA 98119

206-352-2050
Fax: 206-352-2049
cwiley@pprc.org
www.pprc.org

Puget Sound Energy

} Nora Williams, Conservation Programs Manager
P.O. Box 90868 XRD-01
Bellevue WA 98009-0868
206-447-3117
Fax: 206-287-3933
nwilli@puget.com
www.pugetsoundenergy.com

Seattle City Light

} Jean Shaffer, Commercial/Industrial Conservation Manager
700 Fifth Avenue, Suite 3300
Seattle, Washington 98104-5031
206-684-3747
Fax: 206-684-3682
jean.shaffer@ci.seattle.wa.us
www.ci.seattle.wa.us/light/conserves/business

} Jack Brautigam, Climate Wise Program
700 Fifth Avenue, Suite 3300
Seattle, Washington 98104-5031
206-684-3954
Fax: 206-684-3682
jack.brautigam@ci.seattle.wa.us
www.ci.seattle.wa.us/light

Seattle Public Utilities

} Al Dietemann, 1% Water Conservation Lead
Water Conservation Department
710 Second Avenue, 5th Floor
Seattle, WA 98104
206-684-5881
al.dietemann@ci.seattle.wa.us

} Rich Gustav, Resource Conservation Manager
Resource Conservation Office
710 Second Avenue, 5th Floor
Seattle, WA 98104
rich.gustav@ci.seattle.wa.us
www.ci.seattle.wa.us/util/rescons

} Hans van Dusen, Commercial Resource Conservation Marketing
Resource Conservation Office 1% Water Conservation
710 Second Avenue, 5th Floor
Seattle, WA 98104
206-684-4657
hans.vandusen@ci.seattle.wa.us
www.cityofseattle.net/util/onepercent

} Philip Paschke
Water Smart Technology Program
710 Second Avenue, 5th Floor
Seattle, WA 98104
206-684-5883
phil.paschke@ci.seattle.wa.us
www.cityofseattle.net/util/onepercent/commercial.htm

- **Seattle Steam**
 - } Paul Prescott
1319 Western Avenue
Seattle, WA 98101
206-623-0442
Fax: 206-467-9092
seasteam@seanet.com

- **Washington State Department of Ecology**
 - } Rob Reuter
Hazardous Waste & Toxics Reduction, NWRO
3190 - 160th Ave. SE
Bellevue, WA 98008-5452
425-649-7086
rru461@ecy.wa.gov
www.ecy.wa.gov

 - } Scott Lamb
Northwest Regional Office
Closed-Loop Water Recycling Technical Assistance
3190 - 160th Ave. SE
Bellevue, WA 98008-5452
425-649-7268
slam461@ecy.wa.gov
www.ecy.wa.gov

- **Washington State General Administration Plant Operations Support Program**
 - } Phil Person
Facilities Resource Coordinator
PO Box 41012
Olympia, WA 98504-1012
360-902-0434
Fax: 360-586-9186
pperson@ga.wa.gov
www.ga.wa.gov/plant/plantops.htm

Highlights from Participant Briefings

Seattle Public Utilities

(Rich Gustav, Al Dietemann, Jenna Smith, Hans van Dusen, Phil Paschke)

- SPU is looking to triple water savings returns.
- The utility will fund up to 50 percent of the project costs for eligible water conservation projects.
- SPU provides quite a bit of technical assistance.
- SPU is expanding eligibility for toilet and urinal incentives.
- SPU plans to work (somewhat chronologically) with landscaping, hospitality, office/general commercial, hospital and education customers in the coming year. Throughout the year the utility will also focus on manufacturing and processing customers. Next year, SPU plans to work with multifamily customers and the warehousing/transportation segment.

Business & Industry Resource Venture

(Bill Anderson)

- Under contract to provide outreach and technical assistance to SPU on multiple conservation issues, including stormwater, water conservation and waste reduction.

- Conducted vendor workshops and getting calls from interested vendors.
- The BIRV will conduct outreach to organizations, including the Washington State Hotel/Motel Association, Washington Restaurant Association, Association of Higher Education Facilities Engineers, Apartment Association of Seattle-King County, Washington Society of Health Care Engineers, Association of Facilities Engineers, Building Owners and Managers Association, and the Manufacturing and Industry Council.
- Technical workshops are planned.
- Goal is to facilitate applications for water conservation and other resource programs.

Envirostars / King County Local Hazardous Waste

(Laurel Tomchick)

- Envirostars is working with dry cleaners, which also have wet cleaning processes.
- They provide on-site assistance.
- The focus is primarily on hazardous waste management and reduction of hazardous waste.
- Envirostars has a financial assistance program.
- They have partnered with Seattle City Light and referred Envirostars members to SCL's program.
- Envirostars publishes a newsletter for its business members, many of whom are receptive to conservation.

City of Bellevue Water Utility

(Vikki van Duyne)

- The city recently consolidated its business resource conservation outreach.
- They are coordinating with SPU on outreach.

Seattle City Light

(Jean Shaffer)

- Seattle City Light's service area extends north to the county line (not including Bothell) and south to Tukwila (not including Southcenter or SeaTac).
- SCL has been providing conservation services for 25 years.
- The utility's most attractive offerings are its financial incentives - it will fund up to 80 percent of a retrofit project.
- SCL addresses both new construction and retrofits.
- Assistance provided in three categories: free facility assessments (they are aggressively partnering with SPU to make provide multi-resource assessments); design assistance (focuses more on new construction); and commissioning services.
- A new program being offered is the 10 + 10 bonus (Jean provided flyers on this program), through which SCL is waving caps on incentive levels.
- SCL expects to see more problems related to energy in the summer.

Northwest Pollution Prevention Research Center

(Chris Wiley)

- The PPRC currently does not focus on water conservation, but it is interested in expanding its services to be more comprehensive.

- The PPRC likes to transfer ideas and share information about good programs and opportunities.
- PPRC's biggest contribution on the commercial/industrial side is its industry roundtables, which provide a good way to try to get the industry to drive solutions to problems and identify gaps in information.

Environmental Coalition of South Seattle

(Charlie Cuniff)

- ECOSS provides technical assistance and has developed an environmental extension service approach similar to the agricultural extension service model. Currently have three extension agents and plan to hire one more. One agent is a physicist and chemist who is helping businesses reduce their use of chemicals and hazardous materials. Another agent is a geologist and focuses on cleanup and redevelopment of contaminated areas and brownfields. The third agent focuses on stormwater and will be working with the BIRV and SPU on outreach.
- ECOSS' primary focus is working with industry and manufacturing businesses in King County, especially in south Seattle.
- They also provide general business assistance, which can often have environmental side benefits (such as road maintenance and paving).

King County Industrial Waste

(Jeff Bowman)

- The industrial waste section focuses primarily on regulatory activities, but they want to take their job to the next level for water conservation by providing tips to and increasing awareness in the regulated community of what can be done.
- King County has seen some good successes. Some companies have been able to recycle their water because they've gotten their water so clean.
- They regulate more than 70 different industry types - this includes just about any company that uses a lot of water for industrial processes). There are 22 staff in this department.
- They are especially concerned about and interested in water conservation during the wet season, when excess water runoff and discharges could result in combined sewer overflows (CSO events).
- Industrial waste staff see a lot of opportunities for conservation when out in the field.
- Metal platers are a focus for the county, as are food processors because they use large quantities of water.
- Staff are out doing inspections and do a lot of on-site work. They visit the large companies at least annually.

Department of Ecology

(Scott Lamb & Rob Reuter)

- Scott and Rob are part of team that has been working on pollution prevention with the regulated commercial / industrial sector for the past then years. These companies are required to submit pollution prevention plans and reports.
- Their focus is on wet sector processing that uses 100,000+ gpd. This includes aerospace and plating industries, as well as others.
- They've established three tiers and the goal is to move businesses through those tiers. At the third tier, the goal is a 25 percent reduction. Focus is on reducing water use and hazardous waste.

- They work with over 300 businesses in the region (King County north to Canada), and about 150 to 200 of those businesses are in the King County service area.
- Scott and Rob do a lot of outreach and education, including activities such as workshops. During these activities they can provide information on water conservation, energy conservation, etc.
- Ecology may be able to mobilize more people statewide on the issue of water conservation.

Seattle City Light / Climate Wise
(Jack Brautigam)

- Climate Wise's focus is on climate change and environmental performance of businesses.
- They are trying to make the business case for resource efficiency.
- The drivers are sustainable development, climate change and cost efficiency. The idea is to combine cost savings with positive actions for the environment.
- Climate Wise has more of a marketing focus - it's a network and recognition program for businesses.
- They are trying to leverage resources with others in the region. Also trying to engage the business community as a partner.
- The city has committed to reducing CO2 emissions. At some point CO2 could be considered a pollutant.

King County Solid Waste Division (Green Works)
(Kinley Dellar)

- Green Works is a business recognition program focused on reducing solid waste.
- The program is being phased and will be redeveloped. The plan is to replace it with a more useful toolbox that addresses more than just solid waste.

Washington State General Administration / Plant Operators Support Consortium
(Phil Person)

- This program provides a network of resources for member agencies.
- Members include schools, ports, and public facilities.
- The program responds to members' concerns, which often include conservation issues.
- They are always looking for opportunities to collaborate and share resources and ideas, as well as opportunities for developing innovative approaches.
- Work closely with Gwen, who is in charge of the RCM (resource conservation manager) program.

Puget Sound Energy
(Nora Williams)

- Nora works with the commercial group at Puget Sound Energy.
- PSE collaborates with Seattle City Light and Seattle Public Utilities.
- PSE has a commercial coin-op laundry program and a number of conservation programs, some of which are related to water.

- They are currently working with SPU to look at conservation in hotel laundry operations.
- PSE is working on allowing personal energy management - for business and residential customers - so customers can use energy at non-peak times.
- PSE does energy audits and offers extensive lighting programs.
- The PSE commercial customer base is well over 500,000.

Highlights from Customer Presentations

Ken Gross, GM Nameplate

- GM Nameplate is a large screenprinter with two plants in Seattle.
- We are a large quantity generator of hazardous waste.
- Jeff Bowman from King County visits twice a year.
- The energy crunch has moved things that were on the back burner to the front burner. We have replaced lamps and are changing out drives on our motors. We have also joined Climate Wise and are looking for ways to reduce our energy use.
- We also have a Water Smart Technology rebate going on and are working with Seattle Public Utilities.
- King County required that we submeter our various processes, and though we didn't like that at first, it has turned out to provide very useful information regarding our water use. Before the submeters were put in, we had no idea how much water one process was using over another.
- We made some discoveries about our water used for film processing and now we are recycling 95 percent of that water (it's fairly clean water). This reduced the water use from 20,000 gpd to 1,000 gpd for that process. The equipment paid for itself in four months.
- GM Nameplate found out about the SPU incentive program from Jeff Bowman at King County. So now we are getting water related rebates and we're getting some incentives from Seattle City Light because some of the things we've done also are saving energy.
- The rebate and technical assistance programs offered are good, but businesses don't always find out about the programs.
- I get information by checking web sites monthly for ideas, by staying involved with industry groups.
- It seems that King County Industrial Waste and SPU have worked well together, and SPU and Seattle City Light have also worked well together. But Ecology doesn't always seem to be on the same page as the other agencies. Some of their regulations are hard to understand. Their regulators also will tell you that you're out of compliance, but don't provide ideas for how to come into compliance.
- It is important to tell businesses how to reduce their consumption and how reducing consumption will, in turn, alleviate regulatory or permit requirements. This needs to be done more.
- We also would like more feedback from Ecology on the pollution prevention plans we are required to submit.

Russ Simonson, Lafarge Corporation

- Lafarge is a cement plant that has operations worldwide. The Seattle plant started water conservation for the past three or four years, and this was spurred by a lawsuit.
- Cement plants use a lot of energy.
- Being approached by multiple agencies can be likened to being the hub of a wheel and the agencies are spokes coming into the center from all directions.
- Economics drive decisions. A lot of conservation efforts that the industry undertakes are strictly by the numbers. But that does not mean it's impossible to get projects accomplished that don't have large financial benefits. There are other benefits that may catch a business' attention, such as good PR. Also, if taking conservation actions will bring a company into compliance, it's easy to make the pitch to management.
- We have a 25-acre plant and we can reuse our water runoff (it comes out to something like 20 million gallons a year) as an alternative source of water. We also are willing to take our wastewater and use it for process operations. But we have to have a deal with Ecology, King County and others to do that. We are trying this out.
- We work closely with Seattle City Light.
- Dealing with the multiple agencies that approach us has been great. We've worked with King County (Jeff), Ecology (Rob), Seattle City Light (Jean and Jack), and ECOSS (Charlie).
- The nonprofit organizations cause me more problems than agencies.

Terry Taylor, Northshore School District

- Northshore is the ninth largest school district in the state.
- Things have changed a lot in the last five years. We've signed a MOA with the Snohomish PUD, the four water districts (Bothell, Woodinville, Northshore and Alderwood) and the utility.
- Compliance issues are difficult and costly for us. Often we are faced with making choices between teachers or education programs and conservation activities.
- Throughout the school district, conservation activities are going on, but they are in pieces. Perhaps we have a good electric rebate in one area, but not a good water conservation rebate.
- There are private companies now poised to take advantage of the schools need to reduce spending on utilities (consultant firms offering to help the school save lots of money with conservation activities). But the utilities have all that information and should be providing it to the schools.
- It can be hard to reach decision-makers in schools. The message has been going to facility managers, and we are sincere about conservation. But our resources have been cut and the message needs to go to the top-level administration and management.
- We need a collective message from you all and then we can get that word out to the school facilities in our district.

Paul Prescott, Seattle Steam

- We supply steam to hospitals, agencies and many businesses in Seattle (we have 200 customers). We have 18 miles of pipe running under Seattle.
- Seattle Steam uses a lot of water.
- The prospect of cutting our costs motivates us.

- Agencies need to be aware that sometimes a plant has done all it can to conserve water. Perhaps then they can look at collecting stormwater for reuse or trying to find another source of water (i.e., steam).

Next Steps for Collaboration

The following list represents suggestions from meeting participants. The items with an asterisk (*) represent actions the group felt it should undertake in order to further collaboration among group members. The person or organization listed after the * items agreed to take the lead on that particular action.

(*) Develop list serve for coordination and follow up with people in this group. (Kinley Deller - King County Solid Waste)

(*) PPRC has a list similar to the item identified in the previous bullet. ITAP is a similar database. Send out a template of the ITAP database. (Chris Wiley - PPRC)

(*) Provide education on conservation and incentives, including information on target businesses. (Jean Shaffer - SCL, Hans van Dusen and Philip Paschke - SPU)

(*) Make presentations at brown bag lunches and breakfast forums for businesses and staff. (Jean Shaffer - SCL, Russ Simonson - Lafarge Corp, Hans van Dusen and Philip Paschke - SPU)

(*) Hold a follow-up meeting in May. (Hans van Dusen - SPU)

(*) Work with Vikki from the City of Bellevue to write an article for the Business Journal. (PPRC)

(*) Try to get on the agendas of business organizations and explore hosting a business luncheon. (Charlie Cunniff - ECOSS)

Take advantage of opportunities to reach schools: WAMOA, chaired by Terry Taylor of the Northshore School District, is holding a conference in October. There is also a superintendents' conference coming up.

Identify where agencies and organizations have overlap in their outreach and/or regulatory activities.

Develop a geographic analysis showing which programs are available geographically. This could be presented on a web site.

Create a master contact list from all contacts the group members have developed.

Develop a list of business information sources, such as email newsletters, web sites, associations, newsletters.

Utilities need to understand their customers and what they have done and make this information available to other businesses (as a learning tool).

Make joint presentations to organizations, especially during on-site visits and at conferences.

Develop industry-by-industry list of top 10 things that businesses can do for conservation and distribute this to businesses and organizations. Get the Puget Sound Business Journal to run this or something similar.

Seattle City Light has customer case studies and provides these to anyone interested.

Have networking opportunities for people in this group (such as this meeting, which was valuable).

Identify a common industry to two that the group can focus on together with rotating messages on different aspects of conservation.

Develop a resource list with information on:

- What are the messages being presented by each organization to the commercial/industrial sector.
- Who is being targeted by each organization.
- How is each organization conducting outreach.
- What resources/contacts does each organization have.

6.3 PUBLIC SECTOR MANAGERS WATER MANAGEMENT WORKSHOP

Because the public sector is the largest water user in the area, and because the BIRV is focusing on the private sector for its workshops, the consultant team conducted a workshop targeted at government agencies with high-water use (city, county, port). The workshops ran from 8 am - Noon on March 13, 2001.

The workshop provided an opportunity for public managers to learn to recognize opportunities to improve their facilities' water efficiency, and enlist utility programs to improve facility operations. The public sector workshop was coordinated with the City of Bellevue Water Utility. Attendees were solicited from SPU, purveyor and consultant contact lists of public sector facility managers.

The intent of the workshop was three-fold:

- ◇ Provide “case study” experiences in public facilities. The case studies were intended to provide both technical and managerial experiences. (See attached PowerPoint presentations)
- ◇ Provide a simple technical evaluation tool to do a “self-assessment” of their facilities to determine the potential for water savings. (See attached assessment forms)
- ◇ Provide program support connections with water and energy utilities for financial and technical support.

The workshop was successful in attracting facilities personnel. While time was short to cover the amount of material, the feedback from those who attended was positive. Participants were very engage in dialogue with each other and the panelists on water conservation and efficiency technologies. Many commented on the value of “case study” presentations that addressed specific measures and equipment currently available. They also valued the potential to link with other programs for funding and technical assistance.

Small workshops of this kind can be excellent inexpensive outreach opportunities that forge linkages with the purveyors, and can target specific audiences for recruit and program participation. Purveyor co-sponsorship was an essential component of its success. Although purveyors are typically understaffed for conservation program efforts, many seem to welcome the opportunity to participate once they are involved.

Based on the success of this workshop, the consultant team recommends that SPU offer more workshops for public sector customers in the future.

Agenda Overview

- 1) Opening and Introductions
- 2) Success stories – Moderated Panel Session – Mike Jackman
- 3) Moderated Panel / Audience – Moderator will begin with questions two lead questions to begin the dialogue. Moderator will solicit questions from the audience to the panel challenging them to be specific to help give insight to establishing a water conservation plan. (20 – 30 minutes)
- 4) Assessing you situation: Roger VanGelder, Rice Group
- 5) Utility Program Support
 - SPU Water Wise measures and incentives (15 minutes)
 - City Light – Jack Brautigam provide overview and summary of SCL interagency program (15 minutes)
- 6) Next steps. Internal assessment with the assistance of SPU.

Meeting Highlights

Hans VanDussen kicked off the workshop with an overview of current water resources, the season potential for shortage and SPU strategies for balancing conservation and supply additions to the system.

The “case study” portion of the agenda was delivered in a panel discussion format with a moderator and three presenters. Mike Jackman of the City of Bellevue moderated. He introduced the session with a brief statement giving the purveyor perspective on water conservation and resource management in general. Each presenter provided information on different types of water projects. The presenters provided information on:

- Their facility
- What motivated them to look at water conservation?
- Barriers experienced in identifying and implementing conservation measures.
- What they did to overcome barriers

The presentations covered a range of facility water usages (general domestic water use, toilets, cooling, and irrigation).

Roger VanGelder of the Rice Group Inc. delivered the assessment portion of the agenda. The assessment materials included SPU incentives for the various measure opportunities. Roger developed an Excel file form to evaluate potential projects for savings. Participants received a hardcopy of the spreadsheet form with an offer to Email the electronic version upon request. Thus far we have received and responded to two requests for the spreadsheet.

The workshop concluded with brief presentations by other utilities and assistance programs being offered in the area. They were:

Building and Industry Resource Venture – Bill Anderson

Bill outlined the BIRV connection with the SPU 1% Conservation Program in assisting businesses with identifying measures and applying for assistance to SPU.

Seattle City Light – Jack Brautigam

Outlined general commercial program incentives (up to 60%) for efficiency improvements, and the Climate Wise program. Jack provided handouts on the programs available.

Seattle Public Utilities - Phil Pascke

Much of the agenda covered SPU's 1% Conservation and Water Smart Technologies. Phil reiterated program commitments and invited participants to contact him for further assistance.

Puget Sound Energy – Mary Smith

With the current energy crisis looming, Mary explained PSE's commitment to efficiency measures and the potential for joint efforts with equipment that are water and energy intensive. PSE is offering up 50% of project cost grants with an additional 10% bonus if the project is completed by December 31st of this year.

General Service Administration – Bob McKenzie

Bob's program is the Building Operations Consortium. This is a self-funding program that offers technical and administrative support to its members to solve a wide variety of managerial and operational problems. Energy and resource management is a substantial portion of program services.

6.4 PARTNERSHIP DEVELOPMENT WITH PUGET SOUND ENERGY

In an effort to build on SPU's existing relationship with Puget Sound Energy, the consultants arranged a meeting to discuss opportunities for partnerships and leveraging resources. Following is a summary of the meeting.

Attendees

<u>SPU</u>	<u>PSE</u>	<u>Consultants</u>
Rich Gustav	Nora Williams	Michael Karp
Al Dietemann	Mary Smith	John Doyle
Hans VanDusen		
Phil Paschke		
Jenna Smith		
David Broustis		

SPU Intro

After opening introductions, Rich Gustav gave a summary of the 1% program and objectives. In his overview, Rich indicated that the 10 year savings goal is 1% per capita and that 1/3 of the saving was to come from Commercial / Industrial, 1/3 from Irrigation and 1/3 from

Residential. The 1% savings per year over 10 years was an achievable goal without a reduction in life-style or quality of life.

PSE Programs

Nora Williams, Program Manager for Market Services, led off for PSE and identified programs that PSE was offering in the commercial / industrial area, and Mary Smith, Senior Engineer for Energy Management, provided specific program details and applications. They were:

Small Commercial Audit Program -

On-site – PSE program and engineering support will provide on-site audits and evaluations for commercial / industrial customers that may have significant savings or load management savings potential.

On-line – Currently, they provide telephone Hotline assistance to small commercial customers. This service includes a verbal audit/walk-through of the customer's facility. Telephone staff use facility data to provide generic guidance for energy saving measures for facilities like theirs. PSE has acquired and will launch a new web-based self-audit program sometime in the near future. The program is ready to go and awaiting IS priority within PSE.

Lighting Rebate – rebates on commercial lighting retrofits specifically identified by PSE

“Vending Miser” Rebate - this program applies to vending machine distributors.

New Construction – Support for “beyond code” measures that are approved. They are still getting this program going. Slow starter

Motors - this is primarily for large commercial / industrial clients using large or many pumps and motors. In conjunction with the Motor Challenge program for USDOE, they prescribe repair and replace O&M procedures that will lead to more efficient motors being used.

RCM – Initially a schools program that has expanded in PSE territory to commercial and local government facilities. This program includes all resources and utilities for facilities.

Commissioning Assistance – PSE is supporting the implementation of building commissioning for customers with large capital projects. They are providing cash incentives for development and implementation of a commissioning plan.

O&M Initiative – Under development is a training and implementation program directed at O&M staff to use a checklist as a basis for a walk-through and measure ID for “operations” improvements.

Note: PSE serves approximately 2,000 small commercial and 3-400 large customers per year with conservation assistance. They have approximately 80,000 customers in their service area in the commercial sector, of which 2/3 are in the purveyor areas.

Past and Current Partnership Programs Between SPU and PSE

- Coin operated laundromats
- Multifamily program
- Climate Wise
- RCM program

PSE Marketing Efforts

- Print media (newspapers, newsletters and trade magazines) – They use this periodic program announcement and initial offerings
- Direct mail – they don't use direct mail a much now as in the past, but they do have "Promotion Tracking System" that logs and tracks responses from individuals and companies to promotional efforts. They especially keep track of customers that take action as a result to promotional activities.
- Bill Stuffers – they do not use the mechanism much any more. However, they do send things out occasionally.
- Commercial Newsletter – this is new and will start up soon. It will be sent out electronically for those customers who sign-up

Ideas

- PSE and SPU were very interested in each other's programs. Both recommended further evaluation of program crossover linkages.
- PSE and SPU staffs need detailed program and contact information on current efforts of each.
- Once staff is identified, it was recommended that they have regular program update meetings.
- PSE Hotline staff could have a checklist item to identify water savings customers and forward customer contact information to appropriate SPU staff for follow-up. This could be done electronically.
- SPU could use PSE's Promotion Tracking System data from purveyor areas to pre-screen mutual customers with high water usage as priority targeted customers for SPU program marketing efforts.
- Joint marketing of programs and cost sharing
- Adding on a water component to the energy audits
- Personal Energy Management program could have a water component to it.
- Technologies that combine water and energy
- Fact sheets that PSE could hand out about SPU program
- Alliance – a contractor referral program
- RCM – moving beyond schools (e.g. Navy, Boeing, Bon Marche)
- Irrigation systems and plumbing (flap valve leaks)
- Behavioral – training and workshops that work with a water utility, with a walk through a facility
- Training on how to work with a consultant
- Operations and Maintenance training that target facility managers, adding a water component.

Next Steps

- SPU to supply PSE with a brief summary of commercial / industrial programs and staff contact information.
- SPU staff will provide a briefing to PSE Hotline on programs and applications to mutual clients.

- SPU should develop an electronic email template for PSE Hotline staff to use to forward customer contact information. PSE already has prototype.
- PSE and SPU to schedule regular program update meetings.
- Primary contacts for joint program efforts will be Hans VanDusen, SPU, and Mary Smith, PSE.

Contact information for PSE

Mary Smith – (206) 447-3149 msmith@puget.com

Nora Williams – (206) 447-3117 nwilli@puget.com

6.5 ON-SITE CONSULTATIONS

As part of the contract to develop strategies for outreach to the commercial and industrial sector, the The Rice Group and Resource Management Associates conducted several on-site consultations with large customers. The goal of these consultations was to identify possible activities for water conservation and to move the customer toward long-term planning for conservation projects.

In-depth consultations were conducted with the University of Washington and the King County Housing Authority. Preliminary consultations also occurred with Evergreen Hospital and Coca Cola Bottling in Bellevue.

Once the consultations were under way, it was realized that getting these large customers to make long-term commitments to water conservation projects would likely take longer than the time the consultants had available for this work. Much of the initial work involved getting to know the customers and their needs, interests and goals, and to help them identify potential savings. Recommendations have been made for possible conservation activities. No formal or informal agreements were made with these customers, however the work started here should be followed by more assistance from SPU or other appropriate water providers to move the customer toward long-term planning.

University of Washington

Progress is being made at UW to reduce water consumption. However, many cost effective opportunities remain which could significantly reduce water consumption and associated costs.

The following upgrades have been made or are in progress:

- Single-pass air conditioning equipment has been replaced in Henderson Hall, ME Building, the Medical Center, and the HUB.
- Resource-efficient clothes washers have been installed in student housing.
- A number of irrigation improvements have been made or are in progress.
- Upgrades have been made to several sterilizers and air compressors at the Medical Center.

Following a number of site visits and on-site consultations, the consultants believes the most cost-effective water conservation measures will be found in the following areas:

- Single-pass equipment replacement including air conditioners, coolers, and ice machines.
- Cooling towers upgrades, including repair or replacement of non-operational towers.
- Medical and laboratory equipment upgrades including sterilizers, tunnel washers, and liquid-ring air compressors and vacuum pumps.
- Toilet fixture upgrades, especially urinals and lavatory faucets.
- Laundry facility upgrades.
- Irrigation upgrades.

In order to achieve both short- and long-term improvements, we suggest that facilities take the following actions:

Management Actions:

- Establish water conservation as a goal and set targets for reducing potable water use.
- Establish a Resource Conservation Manager (RCM) program for the UW.
- Charter a Water Conservation Committee to work in conjunction with Seattle Public Utilities, the Resource Conservation Manager, and the UW Energy Conservation Committee to coordinate planning for water conservation projects.

Maintenance Actions:

- Pilot test water conserving toilets, urinals, and lavatory faucet aerators at one or more locations. Determine most efficient and effective makes, models, and flows.
- Develop and implement a urinal replacement program for high-flush urinals (3.5+ gpf)
- Develop and implement a flush-valve replacement program to ensure that blowout toilets use no more than 3.5 gpf and newer style urinals use no more than 1.0 gpf.
- Develop and implement a lavatory aerator replacement program to ensure that public lavatories use no more than 0.5 gpm as required by code.
- Request an irrigation audit from Seattle Public Utilities. Develop a long-term plan to reduce irrigation water.
- Request water conservation kits be installed on steam sterilizers where potable water is used to cool condensate.

Engineering Actions:

- Review standard specifications for new construction and major remodels. Update to specify use of water conserving toilets, urinals, and lavatories in appropriate circumstances. Disallow installation of liquid ring air compressors and vacuum pumps.
- Update the survey of single-pass equipment contained in the 1997 Abacus study including air conditioning units, ice machines, and laboratory equipment. Prioritize units and develop a multi-year timeline for replacement.
- Develop a master list of all cooling towers. Log conductivity readings and maintenance problems monthly. Determine repairs necessary for Cooling Tower #BBX-17-03-04 in Health Sciences, which is currently operating in single pass mode.
- Identify all liquid ring air compressors and vacuum pumps. Evaluate cost/benefit of replacement or addition of partial recirculation kits. Include evaluation of 10 hp liquid ring vacuum pumps located in Health Sciences BB Wing Mech. Room.

- Evaluate options to conserve water used in garbage disposals used to flush animal bedding to sewer prior to cage washing, in Health Sciences tunnel washers. Options may include bagging waste for disposal as solid waste or installation of valves to restrict water use when disposal is not in use.

Contact information for UW

2/5/01 – Meeting with John Heinz, John Doyle, and Roger van Gelder at the RICE Group offices. John Heinz is a semi-retired special projects coordinator at UW Facilities. John Heinz provided us with a number of contacts at UW.

2/23/01 – Meeting with Jim Shilt and Roger van Gelder

As suggested at our previous meeting with John Heinz, a meeting was held with Jim Shilt at Plant Operations on February 23. Jim was retiring at the end of February and was considered most knowledgeable regarding past water conservation efforts.

Jim provided a copy of the Executive Summary from the 1997 water conservation study done by Abacus. Jim also promised to get a copy of the complete report as well as the follow-up engineering reports for the top four recommendations. Of these top recommendations, he believed only one, installation of a cooling tower on Henderson Hall, had been completed. Review of the remaining recommendations, as well as pilot testing of low-flow plumbing fixtures could be a good place to start. Jim suggested picking a pilot building, such as the HUB, for testing plumbing fixture replacement.

Jim mentioned that King County Metro had contacted UW regarding the possibility of siting a water reclamation facility near UW to supply them with irrigation water. He was not sure what the current status was, but provided the name of Theresa Doherty as the UW contact.

In Spring 2001 UW should have a new database running which should provide access to information on all mechanical equipment, including single pass AC units and all plumbing fixtures. This should help with targeting replacements.

4/4/01 – Meeting with John Chapman, Director of Campus Operations, Rick Cheney, Director of Maintenance and Operations, Dave Fields, Manager of NE Maintenance Zone, Julianne Jaz, Administrative Assistant for Intercollegiate Athletics, Ali Ferdos, Senior Facilities Engineer, Rich Gustav, Phil Paschke, and Roger van Gelder.

At this meeting Rich presented an outline of the 1% Water Conservation program and answered questions from the UW representatives. Roger van Gelder was requested to prepare a brief list of potentially cost-effective water conservation opportunities for further investigation.

4/6/01 – On-site visit. Obtained copy of November 1993 Campus Restroom Report including restroom surveys and fixture counts. Obtained a copy of the Individual Buildings Survey for Henderson Hall, Gerberding Hall, Fisheries Center, and Health Sciences Steam Still. Conducted a visual survey of restroom fixtures in men's restrooms in 13 central campus buildings.

4/12/01 – Attended the UW Conservation Committee meeting chaired by Dave Fields and discussed potential water conservation opportunities. Afterwards met with John Leadon, Energy Management Coordinator. John offered to arrange a meeting with Sam Tillery and Mike Strong, South Campus plumbing and energy conservation leads.

4/16/01 – Met with Becki Eatch of Housing Services to discuss potential single pass cooling retrofits in buildings operated by Housing Services. Also discussed possibility for shower, lavatory, and toilet/urinal retrofits. I faxed cut sheets for low-flow showers and faucet aerators to her after the meeting.

4/19/01 – Met with Michael Strong, Sam Tillery, Dennis Garberg, and John Leadon at the Health Sciences Center. We discussed potential water conservation measures at Health Sciences. Dennis Garberg accompanied me with a tour of significant water consuming equipment including a sterilizer, RO unit, tunnel washer, and a non-operational cooling tower.

King County Housing Authority

Major opportunities appear to exist for substantial water conservation at low-income housing programs under the King County Housing Authority. These opportunities include:

- Replacement of toilets with low-flow models.
- Replacement of showerheads with low-flow models.
- Replacement of faucet aerators with low-flow models.
- Replacement of coin-op clothes washers with high-efficiency models.
- Participation in the utility-sponsored free irrigation audit and incentive program for irrigation upgrades.

The King County Housing Authority already has a rehabilitation program in place that provides energy audits and coordination of incentives for energy conservation measures to low-income housing providers. Replacement of showerheads and faucet aerators is already being pursued under this program. Adding toilet, clothes washer and irrigation upgrades to the rehabilitation program should be extremely cost effective.

The consultants recommend that Seattle Public Utilities review its toilet incentive policy for multi-family housing and coordinate implementation with King County DNR.

Currently, the 82 unit Glendale Apartments in Bellevue, constructed in the early 1970s, is being remodeled with King County Housing Authority assistance. Dan Auer, King County Housing Rehabilitation Inspector, has indicated that the owner is very interested in receiving incentives to replace all the existing toilets with low-flow models.

Additionally, it is suggested that King County implement a pilot program to test different models of low-flow toilets and then plan a comprehensive, multi-year program to replace high-flow toilets in all the properties which they own.

Contact information

On 3/6/01 The Rice Group and Resource Management Associates met with Fred Campbell, Director of Housing Rehabilitation and Dan Auer, Housing Rehabilitation Inspector. They discussed the fact that King County Housing Authority is currently in talks with King County DNR regarding toilet incentives from the County.

Dan Auer suggested that The Rice Group accompany him on an energy audit of one of the facilities so that I could also do a water audit. Despite several attempts to do so, such an audit opportunity could not subsequently be arranged. Dan also mentioned the fact that county maintenance personnel were skeptical of the performance of ultra low-flow (1.6 gpf) toilets.

John began the meeting by outlining the relationship of Seattle Public Utilities with the other utilities (gas, electric and water). They were unaware of the SPU connections with water purveyors in King County. We then talked about the 1% program and the potential for linking rebates and incentives with their projects. They were very interested in offering these benefits to their clients. Their primary apprehension was concerning low flow toilets. They have a bad reputation, and the Housing Authority does not want to have to deal with callbacks on the toilets. Roger reassured them that the newer models work better, and they could do a demonstration (small scale) project to test the program equipment and mechanisms.

Fred shared the Housing Authority Structure with us. There are other Departments, such as Assets Management, and Construction & Maintenance who would also benefit from these types of program incentives (see contacts). In fact, Dan indicated that his clients have been requesting water usage assistance over the last couple of years, but they didn't have any program offerings or connections.

(Side note: The Housing Authority's departmental divisions are separated by public vs privately owned facilities. Fred and Dan indicated that the private sector owners are very eager to lower their water bills and have asked for this often. The publicly held facilities haven't expressed the same level of interest.)

Evergreen Hospital

After consulting with representatives from Evergreen Hospital and their medical equipment service providers, the following recommendations are made as immediate water conservation:

- Request that Essential Medical Services, the medical equipment service provider, install appropriate water conservation kits including trap cooling modifications and vacuum pump modifications on steam sterilizers and other equipment which they service. (Cut sheets describing these water conservation kits has been provided to Essential Medical.)
- Request a free irrigation audit from Seattle Public Utilities.

Additionally, Evergreen may wish to investigate the cost effectiveness of providing closed loop cooling to the water cooled vacuum pumps. Metering conducted on these pumps indicated a water use of approximately 475 gallons per day.

Contact Information

On 12/8/00, SPU invited The Rice Group to participate in an on-site consultation with Chuck Davis, the Director of Support Services at Evergreen Hospital, Todd Buxton, Mechanical Systems Coordinator, together with Phil Paschke from SPU and Michael Brent from Northshore. At the meeting focused on the potential of water conservation opportunities. Water cooled vacuum pumps, autoclaves, and irrigation were identified as areas for further investigation.

On 1/16/01 The Rice Group dropped off a 3/4" hot water meter with Todd Buxton, as requested at the previous meeting. On 2/26 Todd told The Rice Group that it looked like the vacuum pumps had used 12,711 gallons in 27 days. He planned to leave the meter in place a while longer to confirm this usage. He is also still planning to research water conservation options for their autoclaves.

On 3/23/01 The Rice Group picked up the hot water meter from Todd Buxton.

On 4/16/01 The Rice Group met with Jim Walker, Facilities Manager at Fred Hutchison Cancer Research Center to discuss their success with installing water conservation kits on

steam sterilizers. The Rice Group sent a summary of the Fred Hutchison accomplishments to Todd Buxton.

Coca-Cola Bottling, Bellevue

Immediate savings are available to Coca Cola for installation of a conductivity controller on the evaporative condensor. By increasing cycles of concentration from a current 2.9 cycles to a recommended 10 cycles would save an estimated 2.9 million gallons per year. Estimated payback is less than one year.

Contact Information

On 2/27/01 The Rice Group met with John Terry, Director of Operations at Coca Cola Bottling of WA, together with Phil Paschke and Vikki Van Duyne of Bellevue Water Department. We reviewed the recommendations contained in the 1995 Cooling Water Conservation Study funded by SPU. John indicated that of the four recommendations, only one had not been implemented, which was to install a conductivity controller in the evaporative condensor. While we were there, John helped Phil test the water in the condensor and computed a concentration ratio of 2.9. This was similar to the figure of 2.7 measured in 1995. Vikki agreed to provide billing data to Phil so he could compute savings potential.

Coca Cola will also be installing a new bottling line this year. John Terry was interested in the possibility of incentives for installing water conserving technologies in this new line. He was also interested in installation of a heat reclaim system from the compressors served by the evaporative condensor. It was recommended he contact PSE regarding their incentive program, and that incentives may be available from PSE and the water utility.

On 4/17/01 The Rice Group received some Coca Cola billing data from Vikki.

6.6 OUTREACH MATERIALS

Technical Fact Sheets

The consultant prepared fact sheets on:

- Cooling Tower Conductivity Controllers
- Single-Pass Uses

Case Studies

The consultant prepared case studies for:

- Shoreline School District
- Ivar's
- Fred Hutchinson Cancer Research

Web Site Upgrades and Content Development

Web Site Strategy Summary

Site Topic

Modifications to 1% Water Conservation for Commercial and Industrial Customers
(David Broustis, page owner)

Purpose

Develop improvements to the site for regional commercial and industrial customers to easily and quickly find:

- 1) information about water conservation that is relevant to businesses, and
- 2) tools to take action and begin conserving water.

Desired Results

Increased use of services offered by 1% Water Conservation's Commercial / Industrial Program, including incentives, on-site visits and technical assistance.

Site Message

1% Water Conservation provides valuable resources that customers need to implement water conservation projects.

1% Water Conservation is a credible and easily accessible source of information, both to utility resources and to outside sources.

Primary Audience

Commercial and industrial customers served by SPU and local water utilities. These people tend to be busy facility operators, plant managers and engineers who do not have much time to spend browsing a web site.

Secondary Audience

People who work directly with commercial and industrial customers, helping them design or manage water systems. This includes contractors and consulting engineers, architects, vendors and government agencies.

Audience Goals

The users of the web site will primarily be interested in accessing resources provided by SPU, local water utilities and others to help them conserve water. Such resources include technical fact sheets, financial incentives, technical assistance and application forms.

Connections

This site is part of the overall 1% Water Conservation site, which also includes a residential conservation program.

Source Material

Some of the information for improvements to the web site already exists on web sites. All of these sites will be linked or incorporated with the revised 1% commercial site.

The addresses of these pages are:

Water Smart Technology Program Home Page:

www.cityofseattle.net/util/RESCONS/wst/default.htm

Water Smart Technology Program Details:

www.cityofseattle.net/util/RESCONS/wst/wst_det.htm

Conservation Tips for Commercial Buildings:

www.cityofseattle.net/util/RESCONS/wst/wst_ctip.htm

Water Efficient Toilets: www.cityofseattle.net/util/efficientToilets/

Commercial Toilet Rebate Program FAQ:

www.cityofseattle.net/util/efficientToilet/faqs.htm

Commercial Toilet Purchasing and Replacement Info:

www.cityofseattle.net/util/efficientToilet/purchasetips.htm

Water Efficient Irrigation Program:

www.cityofseattle.net/util/RESCONS/weip/default.HTM

Irrigation Advice: www.cityofseattle.net/util/RESCONS/weip/advise.htm

Irrigation Resources: www.cityofseattle.net/util/RESCONS/weip/resources.htm

Additional information will be gathered and written by the consultant team.

Site Maintenance

Hans van Dusen will be responsible for maintenance of the site.

Marketing Brochure

A marketing brochure and utility/vendor insert were developed for distribution to customers along with an initial site visit. Many customers don't follow through with water conservation because they aren't convinced of the reasons to do it or because they don't have the time or interest in hunting down resources for getting the job done. The brochure will help motivate a customer to take action, by providing information on benefits and listing resources and steps to take for water conservation. The brochure should help increase follow through by customers.

Resource Guide for Commercial / Industrial CUSTOMERS

In an effort to make it easier for customers to follow through with utility recommendations for water conservation, a resource guide was developed that lists pertinent contacts for associations, vendors, utility staff, agencies and other resource. The Resource Guide was submitted to SPU and contains primarily information that will not require frequent updates.

6.7 PUBLICITY AND MARKETING

Media

Three news releases were prepared under this contract, two to announce an award and one to announce two business workshops. SPU handled the revisions and distribution of most news materials.

Two articles were developed for association newsletters: IFMA-Seattle and WASBO. News releases regarding the AWWA award were provided to the Washington Restaurant Association and Northwest Wall and Ceiling Bureau newsletters.

Research of and Outreach to Associations

Associations are clearly one of the best and most credible avenues to reaching businesses with the message of water conservation. Most associations meet periodically and are interested in presentations on topics that benefit their members. Some also have newsletters in which articles can be placed. The consultant team has developed a database of around 60 associations and resource organizations that can be used to get out the water conservation message. A challenge in this is that some associations have memberships that include businesses outside the Seattle-King County region. For these organization, it would make sense to team with another utility or organization to ensure the presentation is relevant to the audience.

The consultants initiated contact and help arrange presentations for SPU and the BIRV at the following association meetings:

IFMA-Seattle (International Facilities Management Association)

March 20

Contact: Eric Postle (425) 586-5646

-- In addition to the presentation, IFMA requested that SPU come to Eastern Washington in May to make a presentation to the larger membership on water conservation. This opportunity, however, was declined by SPU.

International Association of Plumbing and Mechanical Officers

April 5

Contact: Fred Volkers (425) 452-7243

Washington Restaurant Association

April 24

Contact: Anne Haller

-- This presentation was also an opportunity to recognize Ivar's for a recent water conservation award from AWWA.

BOMA-Seattle

April

Contact: Rod Kauffman

Washington Association of Maintenance and Operations Administrators

May 17

Contact: Bill Platt (253) 571-1299

Northwest Wall and Ceiling Bureau

May 24

Contact: Tiina (206) 524-4243

-- The presentation at this meeting, which takes place in Kelowna, B.C., will be made by the NWCB president Bob Royer. It will focus on recognizing the recent award presented to James Hardie Gypsum by the AWWA.

In addition, the Western Washington Golf Course Superintendents Association also expressed interest in a presentation from Seattle Public Utilities. This did not end up happening, due in part to the fact that it seemed that they were looking for the water conservation message to be delivered by an organization other than SPU.

7. REFERENCES

Arizona Municipal Water Users Association, *Facility Manager's Guide to Water Management*, September 1999, www.amwua.org/fmgtwm.pdf.

North Carolina Department of Environment and Natural Resources, *Water Efficiency Manual for Commercial, Industrial, and Institutional Facilities*, August 1998, www.p2pays.org/ref/01/00692.pdf.

Seattle Public Utilities, *Water Conservation Potential Report*, May 1998, www.ci.seattle.wa.us/util.

California Urban Water Conservation Council, *The CII ULFT Savings Study*, August 1997.

State of California Department of Water Resources, *Water Efficiency Guide for Business Managers and Facility Engineers*, October 1994.

Rocky Mountain Institute, *Water Efficiency, A Resource for Utility Managers, Community Planners, and Other Decision Makers*, November 1991.

San Diego County Water Authority, *Commercial, Industrial, Institutional Voucher Program*, Fiscal Year 1999 Final Report, 1999.