

# Cascade Water Efficiency Program 2014 Annual Report



## Summary

The 2014 Cascade Water Efficiency Program (program) saves approximately 65 million gallons of water, 1.8 million kilowatt hours of energy and 1 million pounds of avoided greenhouse gas emissions per year. The program benefitted thousands of residents, businesses, schools and public agencies through a variety of education and outreach, training, and retrofit actions. The program also continues to promote Cascade as a national leader in resource management. The program provided the requisite water efficiency measures and savings goals for Cascade to meet its state-mandated water use efficiency requirements. Cascade employs 1.5 full-time employees to manage the program, and total program expenses in 2014 were \$663,312, including materials, services, and salaries.

### 2014 Cascade Water Efficiency Program

Measure or Activity	Completed	Savings (Gallons Per Day)
<b>Community</b>		
Irrigation Evaluations	40	
Cascade Gardener Classes	32	
Cascade Gardener Attendees	700	
Rainwater Harvesting Projects	3	
Classroom Presentations	423	
Students Reached	10,509	
Road Shows	16	
Customer Interactions	4,700	
Irrigation Trainings	10	
Indoor Audits	101	
<b>Savings Generated</b>		
Residential Leak Detection Mailer	82,847	106,097
Web Page Conservation Items	622	622
Road Shows Conservation Items	12,563	12,563
Multifamily Showerheads	200	900
Multifamily Bathroom Aerators	200	460
Multifamily Kitchen Aerators	178	409
Commercial Aerators	300	12,900
Commercial Showerheads	2,150	37,776
PreRinse Spray Valves	36	4,932
Irrigation Projects	9	1,800
<b>Total Savings</b>		<b>178,459</b>

## Demand

Despite growth and an improved economy, Cascade's 2014 demand remained relatively flat compared to previous years, reflecting the gains in water efficiency, pricing, and customer awareness. By comparison, peak season demand in 2003 was 38.3 mg.

<b>Cascade Demand From Seattle System</b>		
<b>Daily Average in Million Gallons</b>		
	<u>Annual</u>	<u>Peak Season</u>
2014	26.3	36.6
2013	26.3	36.8
2003-14 (ave.)	26.4	37.0

## Long-Term Objectives

Cascade's program strives to lower regional water demand, particularly peak season demand, so that Cascade may delay or defer development of the White River / Lake Tapps Project or other sources of new water supply. By utilizing existing water supplies more efficiently, Cascade will save millions of dollars for its ratepayers, leave more water in streams for fish, and reduce the region's carbon footprint through decreased energy usage involved in the treatment, transmission, and heating of drinking water.

## Water Efficiency Goal

In October 2013, with authorization from the Washington Department of Health, Cascade adopted a single, regional water efficiency savings goal on behalf of all its members for the planning period 2014-19. The new goal is a cumulative savings of 0.6 mg per day on an annual basis and 1.0 mg per day on a peak season basis by 2020. In 2014 Cascade achieved approximately 30% of its savings goal on an annual basis.

## Strategic Partnerships

Cascade searches for opportunities to incorporate water efficiency into the standards or programs of other organizations. This leverages Cascade’s limited resources and keeps water efficiency from being overlooked as a critical element of regional sustainability efforts. Cascade collaborated with many organizations at planning and programmatic levels including Puget Sound Energy, Seattle Public Utilities, The Master Builders Association, Partnership for Water, Northwest Energy Efficiency Alliance, Seattle Tilth, Master Recycler Composters, Lake Washington Institute of Technology, Washington State Nursery and Landscaping Association, and the Regional Code Collaboration workgroup.

## Youth Education

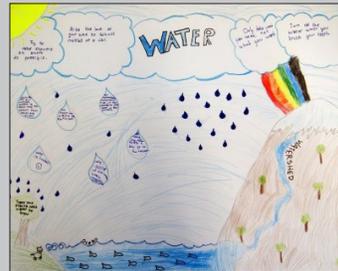
In 2014, Cascade provided 423 water education programs to 10,509 students at schools within all Cascade member service areas, representing a 40% increase from 2013. Cascade offers fifteen programs designed to help schools meet state Science, Technology, Engineering, and Mathematics (S.T.E.M.) requirements. All programs include water efficiency concepts and identify Cascade and its members. Program evaluations provided by teachers are very positive, and many schools register for programs months in advance.

*“I absolutely loved this program and so did my students! Claire was very engaging and she had wonderful classroom management skills. I really hope to see this program continue next year.” - Kathryn Smith, Campbell Hill Elementary (Skyway)*



Studying aquatic life

## Aqua Pals



*Aqua Pals is a new youth education program created by Cascade and administered through Nature Vision that facilitates online student learning on water issues.*

*Students use a secure website to share projects, photos, and research. Students can compare and contrast what they learn about their watershed or water supply with participating students from around the world. In 2014, two Puesta Del Sol (Bellevue) classrooms were connected with students in Albuquerque, New Mexico to compare their respective watersheds and water supplies as well as ideas on how to conserve.*

*Bellevue Student:* “I am connected to water in several ways, mainly by the watershed of the Cascade Mountain Range of Washington. I have learned a lot about water: how we affect water, and how we use it. We also learned how to conserve water, because--of course--water is not infinite, and the ways we can help it.”

*New Mexico Student:* “I am happy to know that you live on the Cascade Mountain watershed. I live on the Rio Grande watershed in New Mexico. I have also learned about how we conserve water. A guy even came in with this huge model and showed us exactly what happens out in the world. It was really cool!”

## Irrigation Learning Lab

Cascade partnered with the Environmental Horticultural program at Lake Washington Institute of Technology (LW Tech) in Kirkland to install an

irrigation system utilizing some of the best available technology to achieve efficient irrigation, such as weather-based controllers, soil moisture sensors, and drip irrigation.

This learning lab will be incorporated into the horticultural program to teach students the basics of smart watering techniques as well as irrigation system scheduling and management.



The irrigation hardware was donated by Hunter and Rain Bird, two of the largest irrigation system manufacturers. Cascade designed the system and oversaw the project, and LW Tech students provided the labor. During the installation, students learned the basics of trenching, pipe sizing, cutting, gluing, wiring, valve box construction, and sprinkler head installation.



In addition to the learning and career development opportunities for the Environmental Horticultural students, the agreement between Cascade and LW Tech allows Cascade to utilize the irrigation system and facilities at no charge for training landscape and

irrigation contractors and other groups, which provides additional value and saves money for Cascade.

*“Our students will have a better awareness of the issues related to water and irrigation... they will know the right questions to ask.”* – Don Marshall, Environmental Horticultural Program Director, LW Tech

## Cascade Gardener

This program uses expert instructors to teach gardeners how to have beautiful landscapes without excessive water and chemicals. Cascade provided 32 classes for approximately 700 residents at nurseries and other venues in all member areas.



Marianne Binetti teaching at Squak Mountain Nursery

## Cascade Road Shows

Cascade participated in 16 community festivals and events. All members were represented, and Cascade interacted with approximately 4,700 residents distributing 12,563 conservation items and answering questions about water supply and water efficiency. The following events were attended:

- Tukwila Backyard Wildlife
- Bellevue Strawberry Festival
- Issaquah Farmers Market
- Emerald Heights (Redmond)
- Kirkland Farmers Market (2)
- Redmond Derby Days
- Bellevue Farmers Market
- Sammamish Days
- Sustain-Fest (Redmond)
- NW Flower and Garden Show

- Issaquah Salmon Days
- EnviroStars
- Skyway Community Event
- 21 Acres Water Celebration
- Trends Conference (Convention Center)



Cascade at Redmond Derby Days

## Appraiser Training

Cascade launched a new workshop in November for members of the real estate industry. The training stemmed from a partnership with SEEC, LLC, an organization that provides sustainability training to the real estate and construction industries, and was driven by Cascade’s desire to reach a broader audience with its water efficiency message.

The all-day continuing education training covered a variety of topics designed to help appraisers and brokers better understand the complexities of developing and providing municipal drinking water services and the importance of water efficiency. Representatives from the Washington departments of health and ecology spoke on water rights issues, US EPA staff covered the

WaterSense program, and Cascade’s Ed Cebron explained the economics of water conservation. Seattle Tilth provided a hands-on drip irrigation activity, and Nature Vision used the enviroscape model to demonstrate problems caused to water supplies by non-point source pollution.

*“Very informative and fast-paced class! Every speaker was terrific, and I returned home with renewed energy. Keep up the good work!”*

- Jon, class attendee



Ed Cebron Presenting to Real Estate Appraisers

## Cost Data Worksheet

Through its relationship with the Northwest Energy Efficiency Alliance, Cascade was asked to help revise the cost data addendum worksheet to include water efficiency. The cost data addendum worksheet is a tool used by real estate appraisers to help them assign value to certain green features of homes. Prior to Cascade’s participation, the savings resulting from water efficiency were not considered when valuing a home. The worksheet now includes WaterSense fixtures, leak detection, native plants, drip irrigation and other elements of a water efficient home. The revised cost data addendum worksheet has been adopted by the national Appraisal Practices Board and will be used by real estate appraisers around the country.

## Irrigation Videos

Cascade’s videos on Drip Irrigation And Beautiful Landscapes Through Smart Watering were among the videos chosen by the California Urban Water Conservation Coalition (CUWCC) for inclusion into its new video library. Members of the CUWCC promote these resources to California residents

as educational tools to mitigate the effects of the drought. The CUWCC reviewed 246 videos and chose 50 for their “content accuracy, relevance, clarity, and production value.” Cascade’s drip irrigation video has been viewed nearly 100,000 times.



Cascade’s Drip Irrigation Video

### Irrigation Efficiency Training

Cascade provided free training for businesses and other organizations to help their staff become better water managers. Program participants included:

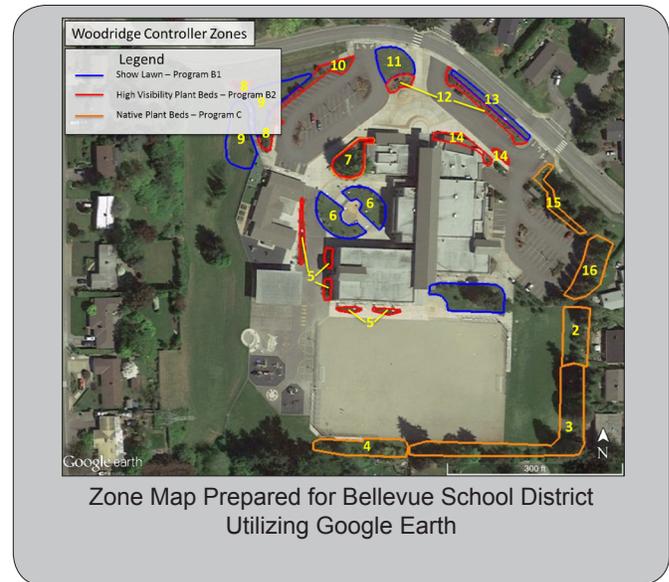
- Bellevue School District
- King County Master Recycler Composters
- Kirkland Parks Department
- Issaquah Highlands
- Bellevue College

Cascade produced four free trainings open to all members of the local landscape and irrigation industry. The courses were offered in English and Spanish and were designed for industry professionals.



Irrigation Training for Spanish Speaking Landscape Contractors

In addition to irrigation evaluations and upgrades, Cascade worked with staff from some of the project sites to train them on efficient irrigation techniques and to document critical information from the projects to help staff better manage the irrigation systems. Project reports include maps with all irrigation zones delineated based on plant type, controller run-time schedules for peak and off-peak seasons, a water budget, and a comprehensive list of recommendations for improvement in each zone.



Zone Map Prepared for Bellevue School District Utilizing Google Earth

## Irrigation Efficiency Projects

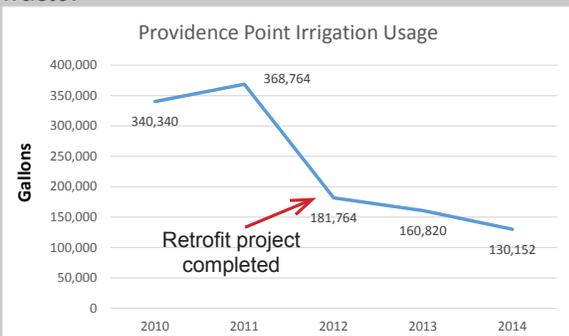
Cascade completed several irrigation efficiency projects with commercial, multifamily, and municipal customers. Previous irrigation efficiency projects completed by Cascade have resulted in customers reducing their irrigation water use by hundreds of thousands of gallons per season.

Program participants included:

- Bellevue School District
- Kirkland Parks Department
- Issaquah Highlands
- Talus (Issaquah)
- Bellevue College
- Village at Overlake (Redmond)
- Three Cedars Elementary (Bellevue)
- Bellevue Service Center
- Barclay Square Apartments (Sammamish Plateau)
- Gateway Corporate Center (Tukwila)
- Bellevue College
- Harmony at Madrona Park (Bellevue)
- Parkside at Woodbridge (Redmond)
- Sammamish Pointe

### Providence Point Irrigation

*In 2012, Cascade supported Providence Point in a major irrigation system retrofit project that included installing weather-based controllers, pressure reduction, check valves, more efficient sprinkler heads, and removed several unnecessary sprinkler heads. The result was a 55% reduction in their water usage with healthier plants and reduced water waste.*



## Direct Installation

Cascade installed 2,486 high efficiency showerheads, faucet aerators and pre-rinse spray valves at 37 businesses and public facilities such as the Embassy Suites in Tukwila. The program installs high efficiency products that save customers money, water, and energy.

## Leak Detection Mailer

In recognition of national Fix A Leak Week, which takes place in March of each year, Cascade sent its annual leak detection mailer with toilet detection dye to all single-family homes in member areas to encourage residents to check their toilets for leaks and repair them. More than 82,000 homes received the mailers, which are customized for each Cascade member. Previous customer surveys indicate that 4,000-5,000 homeowners find and repair (or sometimes replace) leaking toilets in response to Cascade's annual mailer.

## Water / Energy Nexus

Cascade developed a savings calculator that shows the energy saved and greenhouse gas emissions avoided which result from Cascade's water efficiency measures. With this tool, Cascade can provide its members with information to incorporate into their climate action or energy conservation plans and show customers additional benefits from taking action to increase water efficiency.

## Water Audits

Cascade provided water audits for 101 residential living units at four King County Housing Authority (KCHA) properties (two in Kirkland, two in Redmond). The estimated savings from implementing Cascade's recommendations (showerhead, aerator and toilet replacement; leak



Leaking toilet discovered during audit

repair) is 667,000 gallons of water, 88,500 kilowatt hours of energy, and 54,000 lbs. of avoided greenhouse gas emissions per year.

Cascade is currently in discussions with KCHA to determine the best approach to implementing the retrofits at the properties.

### Rainwater Harvesting

Cascade worked with Tukwila Academy, Pine Lake Elementary (Sammamish Plateau), and Jewish Day School (Bellevue) to design and install rainwater harvesting and drip irrigation systems for their community gardens. The systems are solar powered and illustrate the potential for using alternate sources of water and maximum water efficiency through drip irrigation.

### WaterSense New Homes

Cascade completed the design and planning for its WaterSense New Homes program last year. The new program will teach area builders how to construct homes to achieve EPA's WaterSense

certification. WaterSense certified homes use efficient products and fixtures, technologies to minimize wait times for hot water at showers and bathroom sinks, and emphasize good soil and appropriate plants in the landscape. A WaterSense home will use approximately 20% less water than a comparable home without these features and will see little change in the household water demand pattern from winter to summer. Builders who construct homes in member areas to meet these standards and receive WaterSense certification will receive a rebate from Cascade.

### Website Ordering

Cascade offers free water efficiency items, such as showerheads, shower timers and rain gauges, to homeowners in its member service areas through its website ([cascadewater.org](http://cascadewater.org)). The ordering process is easy, and the items are shipped to the customer's door. Cascade provided 1,200 items to residents, apartment complex managers and Cascade members in 2014.

### *z*Home Research

*In 2012, Cascade supported the zHome project in the Issaquah Highlands by helping the builders achieve WaterSense certification for all ten townhomes. In 2014, with all homes occupied, Cascade performed research to determine the effectiveness of the project. Major findings are as follows:*

- *Average per capita use of municipal water was 18 gallons per day*
- *Residents were generally very satisfied with the water fixtures and appliances*
- *There was no perception of sacrifice regarding water*
- *The rainwater harvesting systems were being utilized by all residents*



## MOVING AHEAD

Cascade will continue providing excellent programs and services for its members' customers and saving water for the region. Key strategies to be pursued in the next few years include:

- Cost-effective savings opportunities
- Partnerships to leverage resources
- Community involvement
- Incorporating water education into school learning requirements
- Support of efficient irrigation technologies, certifications and education
- Support of improved standards for water efficiency
- Case studies of successful projects