



Portland Water Bureau Sustainability Action Plan

2014-2015

Table of Contents

Introduction to the 2014 - 2015 Sustainability Action Plan	3
Carbon Emissions Reduction	4
Energy Use Reduction	5
Fleet Efficiency	7
Materials Management	9
Appendix 1: 2004 Sustainability Vision and 2010 Energy Management Charter	10
Appendix 2: Related Programs	11

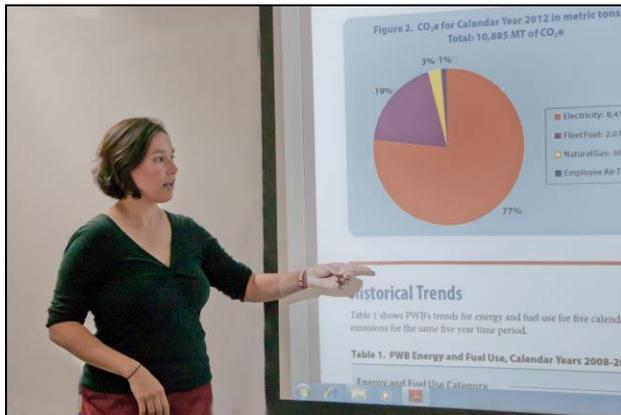
Introduction to the 2014 - 2015 Sustainability Action Plan

The Portland Water Bureau has updated its Sustainability Action Plan which focuses on internal bureau operations. The updated plan includes a streamlined set of goals and strategies for 2014-2015: **Carbon Emissions Reduction, Energy Use Reduction, Fleet Efficiency, and Materials Management**. Empowering and enabling bureau staff to incorporate sustainability into the way they approach their daily work is also an integral part of this action plan. Sustainability staff will continue to work across bureau departments and work groups, and provide technical assistance, communications assistance, education and recognition to bureau staff in a range of sustainability areas. The bureau's *Sustainability Vision* and *Energy Management Charter* are provided in **Appendix 1** to present a broader context for this action plan.

A wide variety of Water Bureau programs contribute to reaching sustainability goals but are not directly part of this action plan. These programs are summarized in **Appendix 2** and include: source protection (Bull Run watershed and groundwater), fish and wildlife protection, climate change, water efficiency, hydroparks, green buildings, sustainable procurement, sustainable commuting, toxic substances, integrated pest management, invasive species management, employee safety and health, and lead hazard reduction.

Since the Water Bureau adopted the 2004 *Sustainability Vision*, bureau staff have made substantial progress moving forward. Recent highlights are described in this plan.

Kavita Heyn
Water Bureau Sustainability Coordinator



Baselines: Sustainability goals in this plan are measured against ‘baselines’ which are used as a starting point to compare trends and monitor progress. These baselines vary depending on when a reliable data set was established for a specific sustainability goal. While the objective is to keep a consistent baseline, the bureau may need to re-establish baselines in the future if a more reliable dataset is identified or if sustainability goals change significantly.

Carbon Emissions Reduction

The City of Portland's [Climate Action Plan](#) establishes a goal to reduce carbon emissions in the City by 80% by the year 2050 compared to 1990 levels. The Water Bureau has annually calculated and reported on its carbon footprint since 2007. Use of the groundwater system can disproportionately affect emissions because this system is so energy-intensive. Therefore the bureau will focus on decreasing carbon emissions as a *trend over time*, with the expectation that emissions may fluctuate in some years due to higher groundwater use.

Goals:

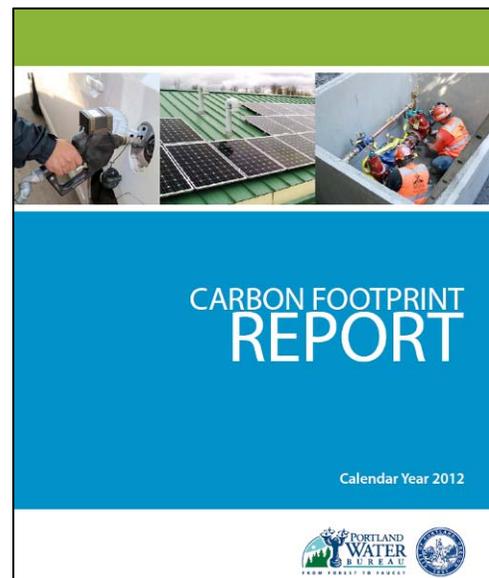
1. Reduce the bureau's total carbon emissions compared to a 2007 baseline of 14,000 metric tons of carbon dioxide equivalent (CO₂e). These emissions are tracked by calendar year to maintain consistent application of the international methodology. Because the majority of emissions are from energy and fleet use, specific reduction goals for these sources are discussed in the relevant sections.

Status:

- Decreased total emissions by almost 6% in 2012 compared to 2011, and 22% compared to the baseline
- Experienced a decrease in electricity-associated emissions in 2012 due to less groundwater use and to energy efficiency measures, whereas fleet fuel emissions increased significantly due to more miles traveled by low-efficiency vehicles

Strategies 2014-2015:

- Continue to track the bureau's carbon emissions from energy use, fuel use and air travel
- Publish Carbon Footprint report annually
- Compare carbon emissions to the baseline year of 2007, and investigate why emissions have decreased or increased
- Work with Water Bureau staff to increase awareness of carbon emissions tracking results and reduction opportunities
- Participate in inter-bureau planning for carbon emissions mitigation



Cover of the 2012 Carbon Footprint Report.

Energy Use Reduction

The Water Bureau's [Energy Management Charter](#) identifies these goals: support continuous efficiency improvements, promote the development of renewable energy projects, track and evaluate energy use, and educate employees about energy use.

The bureau's Energy Committee helps identify and lead energy efficiency improvements, particularly at the bureau's top 10 energy-using facilities (including its top 7 energy-using pump stations). Efficiency measures have included improving pump station efficiency and installing efficient lighting fixtures and digitally controlled HVAC systems in buildings.



Members of the Energy Committee with a rebate check from the Energy Trust of Oregon.

Goals:

1. Achieve Mayor Hales' goal for City bureaus to reduce energy use by 2% per year

Status:

- Reduced total bureau energy use by 10% in 2012 (excluding groundwater), compared to the baseline. This baseline is defined as the average calendar year energy use between 2005-2008 for all bureau facilities, *excluding groundwater*¹ (20,101,017 kWh).

2. Achieve and maintain a capacity of over 400 kW of renewable energy, particularly solar arrays and micro-hydro facilities

Status:

- Enabled a capacity of 322 kW of renewable energy through both bureau-owned and third-party owned installations that are currently operating

¹ Pumping water is the single largest user of electricity in the bureau. Because groundwater pumping is very energy-intensive it significantly influences how the bureau's energy use changes annually and can often disguise energy trends in other bureau operations. The bureau's energy use baselines therefore exclude groundwater operation.

- Installed 55 kW of bureau-owned renewable energy capacity by the end of 2012, including solar arrays at the Meter Shop, Groundwater Treatment building, Powell Butte Interpretive Center, remote solar monitoring stations in the watershed, and the Vernon micro-hydro facility
 - Enabled the installation of a third-party owned 267 kW solar array at the Groundwater Pump station, and a 50 kW micro-turbine owned by Lucid Energy in a section of large diameter gravity-fed pipe in Southeast Portland. The permitting work for this LucidPipe project is still in progress and the turbine is not yet operating.
 - Generated over 62,331 kWh of solar energy from bureau-owned installations as of September 2013, equal to 0.35% of the bureau's 2012 non-groundwater energy use
 - Generated 108,886 kWh of bureau-owned micro-hydro energy between Sept. 2012 and June 2013
- 3. Purchase 'Green-e' Renewable Energy Certificates (RECs) to comply with Council Resolution 36983. The goal of this resolution is for the City to purchase 100% renewable power.**
- Status:
- Purchased 17,803 MWh of 'Green-e' RECS based on actual electricity use and actual renewable power generation during FY 2012-2013

Strategies 2014-2015:

- Implement the Energy Committee's adopted workplan
- Track and measure energy use in bureau buildings and pump stations
- Track and measure the 'wire-to-water efficiency' of bureau pump stations
- Calculate estimated and actual energy savings and incentives/rebates
- Install a new 100 kW solar array at the Interstate LEED Shops and Stores Warehouse
- Pursue Energy Trust of Oregon incentives and rebates for energy projects



Operating Engineer Jennifer Deviren working at a pump station.

Fleet Efficiency

The Water Bureau’s fleet of over 400 vehicles includes dump trucks, pickups, work vans, backhoes, excavators, hybrids, and an electric Nissan Leaf. Vehicles are divided into four main categories: Heavy Duty Trucks, Light Duty Trucks, SUVs, and Sedans/Wagons/Minivans. The bureau tracks fuel use and mileage for all vehicles using City Fleet’s EJ Ward database. The bureau also implements a range of fleet management practices including: purchasing efficient vehicles, installing engine heaters to reduce idling, pooling vehicles, training employees, and using biodiesel.



Water Bureau Fleet
Manager Tom Dufala

Goals:

1. Improve average vehicle class efficiency (miles per gallon/MPG) for all four vehicle classes (see Table 1) compared to a FY 2010-2011 baseline

Table 1: Fuel Efficiency Improvement				
Vehicle Class	FY 2010-2011 Baseline MPG	FY 2012-2013 Status MPG	2017 Goal MPG	2017 Goal MPG % Increase from FY 2012-2013
Heavy Duty Trucks	4 MPG	5 MPG	6 MPG	20%
Light Duty Trucks	9 MPG	10 MPG	11 MPG	10%
SUVs	18 MPG	18 MPG	19 MPG	6%
Sedans/Wagons/Minivans	19 MPG	25 MPG	26 MPG	4%

Meeting the 2017 MPG goals above for each vehicle class will depend largely on market technologies (for Light Duty Trucks) and driver behavior (for Heavy Duty Trucks, SUVs and Sedans) because vehicle replacements in the next three years will be limited based on the current turnover of the fleet.

2. Comply with the City’s [Idle Reduction Policy](#)

Status:

- Provided tips and information to vehicle operators in several work groups on how to reduce idling to improve engine life, reduce fuel costs, reduce vehicle emissions, and improve health and safety

Strategies 2014-2015:

- Evaluate fuel and fleet data, and generate a report summarizing trends in fuel use, miles driven and fleet efficiency
- Analyze idling times and trends in specific vehicle classes, and identify opportunities to reduce idling
- Distribute fleet reports to Supervisors and Managers, and sustain dialogue with Supervisors whose work groups drive the most miles or use the most fuel
- Engage with drivers in various work groups to improve vehicle fuel efficiency
- Purchase vehicles with higher efficiency (improved MPG) as opportunities arise



Operations employee Pete Schlunegger's dump truck gets higher-than average mileage compared to other Water Bureau dump trucks.



Maintenance crews Dustin Lord, Sam Harold and Kevin Getner with a bureau construction vehicle.

Materials Management

The bureau has a diverse waste stream consisting of office products and industrial materials. The bureau recycles the following materials: aluminum, paper, cardboard, bulk metal, plastics, batteries, electronics, glass, food waste, yard debris, paint canisters, PVC pipe, personal protective equipment, construction debris and Styrofoam.

Goals:

1. Achieve the City's goal to recycle 85% of all waste generated by bureaus by 2015

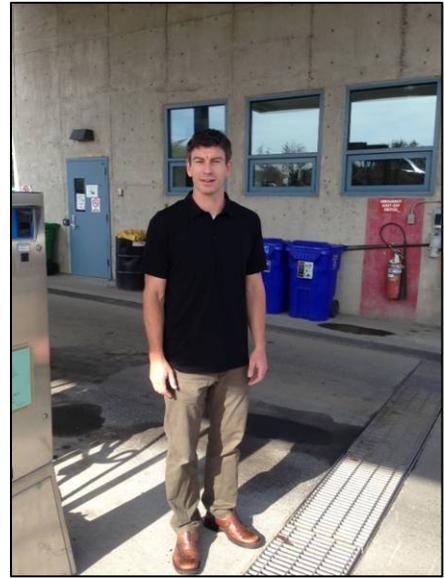
Status:

- Bureau recycling rate was 56% (excluding scrap metal) and 73% (including scrap metal) in FY 2012-2013

2. Reduce the amount of garbage generated

Status:

- Generated 383,149 pounds of garbage in FY 2012-2013, a 35% increase compared to FY 2011-2012. The Interstate facility generated 96% of calculated bureau garbage. Garbage at The Portland Building is not included in this calculation and is tracked separately by the City's Bureau of Internal Business Services.
- Recycled 536,176 pounds of scrap metal in FY 2012-2013, approximately the same amount as FY 2011-2012
- Conducted a waste sort of 250 pounds of garbage and 250 pounds of recycling. Identified several types of electronic waste in the garbage. Sustainability staff subsequently set up new e-waste recycling containers at Interstate.



Sustainability Assistant Matt Weatherly at Interstate.

Strategies 2014-2015:

- Track and report recycling and garbage data in annual reports
- Identify opportunities to reuse materials, and to switch to recyclable or less wasteful materials where possible
- Set up recycling locations at Interstate as the renovation project is completed, and work with employees to encourage use
- Provide help to employees with unusual types or quantities of recyclable materials
- Coordinate with Recycling Coordinators in other bureaus and other partner organizations and agencies
- Stay up-to-date on recycling and waste markets and methods

Appendix 1: 2004 Sustainability Vision and 2010 Energy Management Charter

The Water Bureau's Management Team adopted a Sustainability Vision in 2004 and an Energy Management Charter in 2010, each with the following goals:

Sustainability Vision Goals:

- Reduce operating costs by purchasing materials that are durable and reusable. Where appropriate, the bureau will consider the environmental and social costs of production, use and disposal of purchased materials.
- The bureau will change work processes as needed to make more efficient and cost-effective use of materials, equipment, and natural resources.
- The bureau will improve health and safety for employees by reducing or eliminating use of, and exposure to, hazardous and toxic materials. Work processes will be changed to reduce fossil fuel exhaust, noise, and other related hazards.
- The bureau will provide training, information and tools for employees to enable them to provide water services in a sustainable manner.
- The bureau will provide efficient and effective means to recycle used materials and equipment, and enable use of alternative energy and efficient modes of transportation.
- The bureau will support suitable habitat for fish and wildlife, and healthy ecosystems.
- The bureau will work to encourage efficient use of water.
- The bureau will encourage development of a set of sustainability goals with our regional partners.

Energy Management Charter Goals:

- Develop an organizational culture of energy awareness (electricity and natural gas) that seeks continuous efficiency improvements
- Educate and empower energy efficiency and environmental responsibility in a manner which promotes quality and safety
- Explore and promote the development of renewable energy projects where practical
- Contribute to advancing goals in the City of Portland and Multnomah County Climate Action Plan

Appendix 2: Related Programs

Many of the programs implemented by the Water Bureau on a daily basis are in the general category of “sustainable”. A wide variety of programs and activities not covered in this Sustainability Action Plan are essential to meeting the bureau’s broader Sustainability Vision, including the following:

- **Source Protection:** The Bull Run watershed is managed to protect drinking water quality. Commercial timber harvest is prohibited. No recreational uses are allowed.
<http://www.portlandoregon.gov/water/29784>

The Columbia South Shore Well Field groundwater system is used as an emergency backup and also provides supplemental supply during the summer demand season. The Groundwater Protection Program includes regulations adopted by Portland, Gresham and Fairview to address use and storage of hazardous materials that pose a threat to groundwater. Educational programs are also provided.

<http://www.portlandoregon.gov/water/29890>

- **Fish and Wildlife Protection:** The bureau is implementing a Habitat Conservation Plan to improve water temperatures, river flows, and habitat conditions in the Bull Run and Sandy rivers to benefit threatened fish populations. Maintenance projects in Bull Run are scheduled to avoid wildlife impacts.
<http://www.portlandoregon.gov/water/46157>

- **Green Buildings:** The City of Portland’s [Green Building Policy](#) requires City bureaus to certify all new occupied buildings under the U.S. Green Building Council’s Leadership in Energy and Environmental Design (LEED) program. Half of the Water Bureau’s staff currently work out of the LEED-certified Portland Building. The bureau obtained LEED Gold certification for the Meter Shop in 2010, and is now pursuing LEED Gold certification for two new buildings at the Interstate facility - a Shops and Stores Warehouse and a Maintenance Building. When these buildings are completed in 2014 and 2016, approximately 90% of bureau staff will be based in LEED buildings. The bureau will operate the Meter Shop and the new buildings to use 30% less energy than standard buildings.

<http://www.portlandoregon.gov/water/62791>

<http://www.portlandoregon.gov/water/article/128479>



Luanne Zoller in Engineering Design is responsible for facility management and green buildings, and is also the Program Manager for the Interstate Renovation Project.

- **Climate Change:** The bureau is a member of the [Water Utility Climate Alliance](#) (WUCA) a collection of large drinking water utilities focused on assessing and adapting to the potential effects of climate change through collaborative action. The bureau is developing a hydrologic model and working to obtain downscaled global climate change model data to better understand how climate change may affect the Bull Run watershed.

The bureau has also been involved in the City's Climate Action Plan update, and the forthcoming Climate Change Preparation Strategy. Both plans identify bureau-specific actions (many of which are already part of current operations) that will enable the bureau to reduce carbon emissions and increase resiliency in the face of climate change.

- **Water Efficiency (Residential and Business, Industry & Government (BIG)):** The bureau's residential water efficiency program uses education and outreach, complemented by rebate programs for targeted customers, and pilot projects to test out new water efficiency devices. Water providers in the Portland metropolitan area and Metro work together, through the Regional Water Providers Consortium, to target shared efficiency messages to residential customers. The BIG program helps businesses and multifamily facilities by diagnosing increases in water usage, finding inefficient or malfunctioning equipment, and helping to improve existing methods and processes.

<http://www.portlandoregon.gov/water/29334>



Sarah Santner and Sabrina Litton in the Water Efficiency group

- **HydroParks:** The HydroPark program converts suitable water system properties into neighborhood parks and green spaces, thereby increasing livability of the surrounding neighborhoods. HydroParks are equipped with sustainable features when possible, such as recycled benches and/or picnic tables, water efficiency demonstration gardens, stormwater swales, and community gardens.

<http://www.portlandoregon.gov/water/article/326405>

- **Sustainable Procurement:** The City's [Sustainable Procurement Policy](#) requires City employees to incorporate specific environmental and social equity factors when writing specifications for, or procuring, materials, products, or services.
- **Sustainable Commuting and Alternative Transportation:** The City of Portland offers a [Trip Reduction Incentive Program](#) to encourage employees to commute by walking, biking, carpooling or by using public transit. The Water Bureau also offers alternative transportation options to employees for travel during the work day, including free Tri-Met tickets for public transit, free loaner bikes and bike accessories, bike maps and resources, and several efficient diesel, hybrid and electric vehicles in vehicle pool. The bureau also reports Employee Commute Options (ECO Commute) statistics at Interstate to the Oregon Department of Environmental Quality to comply with the Portland-Vancouver Air Plan to ensure the region will meet the federal health-based ozone standard.
- **Integrated Pest Management:** The bureau uses an Integrated Pest Management approach to minimize the use of pesticides and herbicides during grounds maintenance.
<http://www.portlandoregon.gov/parks/article/116237>
- **Invasive Species Management:** The bureau has a standard operating protocol to minimize the introduction, establishment, and spread of high-risk invasive plant species in the Bull Run watershed. The bureau also has a standard operating procedure for aquatic invasive species, with a focus on preventative measures.
- **Toxic Substances:** The bureau has reduced the toxic substances used in bureau operations and developed a procedure to review the purchase and disposal of all chemicals. The bureau uses only food-grade lubricants and cleansers in water meter, main, and hydrant maintenance and installation. Discharges from pipe, tank and reservoir flushing are dechlorinated.
- **Employee Safety and Health:** The bureau earned a Safety and Health Recognition Program (SHARP) certification by the State of Oregon. The program involves a comprehensive audit and inspection of 56 safety program components. Safety is incorporated into all bureau operations and is highlighted at training events and annual Safety Fairs.
- **Lead Hazard Reduction Program:** The Lead Hazard Reduction Program is an innovative effort to reduce not just hazards from lead in water but all hazards posed by lead. In addition to water treatment and monitoring, the program provides education, outreach and testing for customers in the Bull Run water supply service area. The program is implemented in coordination with state and local public health agencies.
<http://www.portlandoregon.gov/water/29755>

More information is available on the Water Bureau website: www.portlandonline.com/water/