TACOMA PUBLIC UTILITIES Environmental Report 2012



DIRECTOR'S MESSAGE

The Tacoma Public Utilities story began in 1893, when the City of Tacoma bought the privately owned water and light facilities developed by city founder Charles Wright. Over the next century, Tacoma Public Utilities has grown into an organization that provides power, water, rail and telecommunications services to a population of more than 400,000 and operates facilities and manages land holdings in six counties.

Tacoma Public Utilities and the communities we serve are the beneficiaries of the early vision and leadership that led to the construction of a gravity-based drinking water supply system in 1913 and the generation of clean, renewable hydropower from the waters of the Cowlitz, Nisqually, Skokomish and Wynoochee rivers.

Those, and other key investments such as the early recognition of energy conservation as a clean and economical alternative to new sources of power in the late 1970s, form the foundation for our commitment to being good stewards of the land and water we manage.

That same attention to leadership and innovation continues today. It's exemplified in our award-winning energy conservation programs, hydroelectric project efficiency upgrades, water filtration plant construction, aggressive fish and wildlife habitat protection, and reduced emissions and increased fuel efficiency in vehicle fleet and rail operations.

This report is the first comprehensive summary of the contributions Tacoma Power, Tacoma Water and Tacoma Rail have made to the environmental health of the communities we serve and the areas where we have facilities.

We are proud of our environmental record and believe you will be, too. Please take a few minutes to learn about our long history of accomplishments, as well as our future plans. We know there are additional opportunities and challenges, and we are active in helping develop sound public policy in the areas of energy and water supply, transportation and the environment.

Director of Utilities/CEO Bill Gaines is proud of the utility's "green" fleet, including this all-electric Nissan Leaf.

ABOUT TACOMA PUBLIC UTILITIES

Utility Board

Peter Thein, Chair Laura Fox, Vice Chair David Nelson, Secretary Woodrow Jones Bryan Flint

Executive Management

Bill Gaines, Director of Utilities/CEO Ted Coates, Tacoma Power Superintendent Linda McCrea, Tacoma Water Superintendent Dale King, Tacoma Rail Superintendent Steven Hatcher, Customer Services Manager Robert Mack, Deputy Director for Public Affairs Chris Gleason, Community & Media Services Manager Jim Sant, Management Services Manager



BY THE NUMBERS

Tacoma Power

Our service area is 180 square miles, including the cities of Tacoma, University Place and Fircrest; portions of Fife, Lakewood, Federal Way and Steilacoom; Joint Base Lewis-McChord and other portions of Pierce County.

- 169,413 customers
- 2,357 miles of transmission and distribution lines
- 56% of our power supply is provided by our own hydropower facilities; the remainder is hydropower purchased from the Bonneville Power Administration
- 73.5 million kilowatt hours saved through energy conservation in 2010
 - > 527 single-family homes and 18 multifamily buildings weatherized
 - > 127 energy-efficient commercial lighting projects completed
 - > 585,000 compact fluorescent light bulbs rebated or distributed
 - > 2,000 inefficient refrigerators/freezers recycled

Tacoma Water

Our service area includes the City of Tacoma and portions of Pierce and south King counties.

- 97,137 customers
- 1,343 miles of water mains
- 72 million gallons per day are supplied to our customers through the Green River; 12 to 72 million are from seven North Fork wells; 55 million are from local wells; 27 million (and up to 40 million in the summer) are from an additional Green River supply

Tacoma Rail

- One of the largest short-line railroads in the country
- 204 miles of track
- 72 customers
- 14 diesel locomotives

Alder Lake Park at the Nisqually Hydroelectric Project.

ENVIRONMENTAL POLICY STATEMENT

We balance our obligation to provide our customers with reliable, competitively priced services with respect for the natural environment. We are committed to managing environmental impacts by fostering practices of protection, stewardship and conservation. We meet those commitments through our actions in these areas:

Leadership. We actively engage in local, regional and national forums to promote responsible environmental stewardship.

Environmental compliance. We build on a strong foundation of environmental protection programs to ensure that our operations meet local, state and federal environmental regulations.

Science and technology. We use technological development and the best available science to reduce or eliminate adverse environmental impacts.

Habitat and species protection. We responsibly manage and protect the thousands of acres of land and hundreds of miles of streams, rivers and shorelines entrusted to our care.

Conservation. We wisely use energy, water and other resources and ask that our customers do the same.

Education. As a major employer and service provider, we have relationships with hundreds of thousands of citizens. This uniquely positions us to offer information about environmental issues related to the services Tacoma Public Utilities provides.

Transportation. We are committed to reasonable transportation solutions to protect air quality, reduce fuel use and better utilize our regional transportation network.

PAVING THE WAY WITH A GREENER FLEET Hybrids/green fleet

Tacoma Public Utilities bought its first hybrid in 2003, and it's been full speed ahead ever since. Now, with foresight, strong leadership and sound planning, almost 10 percent of our fleet of nearly 600 vehicles is hybrid, including two hybrid bucket trucks. Of our 56 hybrids, we funded 37 and federal stimulus money partially paid for the incremental cost of the rest.

Why does it matter? The utility fleet is highly visible throughout our service area. The cars and trucks we put on the streets reflect Tacoma Public Utilities' priorities, so we do our best to make the most responsible decisions, both financially and environmentally. The biggest payback from our growing green fleet is in reduced emissions – a utility priority. Fuel-burning vehicles contribute to greenhouse gas; replacing them presents an opportunity for us to demonstrate environmental leadership.

All-electric vehicles

Being leaders in green transportation has other advantages. Our Fleet Services group has assumed a leading role regionally in deploying plug-in hybrid electric vehicles (PHEVs) by working with various groups to bring this technology to market. The introduction of PHEVs in our fleet pool in 2007 provided the utility an opportunity to determine the impacts of this technology to the electrical system if and when they are deployed on a large scale.

And we've made the technology more accessible to the public by using grant money to install 10 charging stations at our administration building and elsewhere. We've also used grant money to install six charging stations for our own fleet use. Our charging stations are among the first in the Puget Sound region. We also added two all-electric Nissan Leafs to our fleet in 2011.



687 tons Fuel smart

CO₂ avoided each year through our fleet technology and fuel decisions

Since 2001, our Fleet Services group has used biodiesel in many of our vehicles, which consume about 90,000 gallons of B20 each year. B20 reduces carbon emissions from diesel vehicles. In 2009, we obtained a grant to retrofit 59 diesel-powered trucks with diesel oxidation catalysts, which significantly reduce carbon monoxide, hydrocarbons and particulate emissions.

More recently, we reduced emissions by launching an idle reduction campaign. Tacoma Power set - and met – a goal to achieve a 10 percent reduction in vehicle idle time in 2010.

The hybrid fleet gets charged up for employee use.

COMMUTING - WAY TO GO

We started our successful Consider Alternative Transportation program in 1999. Through it, about 30 percent of our employees do something other than drive alone to and from work five days a week. Instead, they vanpool, carpool, take the bus, walk or compress their work schedule. We help them by subsidizing employee transit transportation, providing employees with free bus fare and either free or low-cost vanpool fare.

Vanpooling in particular has been our biggest success. About 270 employees come to work each day in 32 vanpools, eliminating more than one million miles of single-car travel, saving 22,000 gallons of gasoline and keeping 195 tons of carbon dioxide out of the air.

Since 1998, our transportation program has won 20 Summit Awards for ridesharing excellence in Pierce County and two statewide Governor's Commute Smart Awards.

30%

not driving

alone to work

five days a week

Utility employees



Vanpooling is the utility's greatest commute option success.

WASTE NOT, WANT NOT

The material needs of providing vital power, water and rail services are significant, but we strive to minimize consumption and reuse waste generated from our operations to reduce the impact on the environment.

Waste reduction is an established component of how we operate our business. Our recycling program now captures about 52 percent, or 473 tons, of the waste from our facilities and operations each year.

We recycle paper, glass, plastic, cans, electronics, cardboard and construction debris from our office facilities. Our cafeteria participates in the City of Tacoma's new food waste program, and our buildings management team changed its trash and recycling collection methods to save time and resources. We also convened a team to develop a green building policy and guidelines for building operations to help us run even more efficiently.

The operations of our power, water and rail divisions offer even more opportunities to reduce and reuse materials. We collect and recycle untreated wood waste, used oil, wire, metals, batteries and compact fluorescent lights. We reclaim and refurbish used transformers, reuse transformer oil, and use natural ester transformer fluid, a vegetable-based oil that does not contain hydrocarbons, silicones or halogens. With those and other efforts in place, we continue to demonstrate our commitment to reducing waste and contributing to a healthy environment.



We've used goats as a natural "weeding" method.

186,690 pages &

Pieces of paper saved each year by billing customers electronically

GREEN FROM THE GROUND UP

While our business is power, water and rail, our interests are broader and include minimizing our environmental impact to the areas surrounding our facilities.

As good land stewards, we helped develop about 150 acres of elk fields at the Tacoma Green River Watershed, designing and planting the fields, grazing areas and habitat.

For our landscaping practices, minimizing our impact means using lowmaintenance, drought-resistant plants. Ninety percent of our landscaped areas use a weather-based irrigation system, which results in a 20 to 60 percent water savings. We also work regularly with our customers to replace problem trees with utility-friendly trees to help ensure reliable and safe electric service.

Where practical, we use the least toxic weed control methods, which means incorporating mulch, ground cover, flame weeding, natural herbicides and – everybody's favorite – goats. In fact, we recently used a group of goats to "weed" almost an acre of blackberries in just four days.

A CUT ABOVE - PAPER REDUCTION AND PRINTING

As a utility that provides multiple services to a large customer base, we use a lot of paper. But we're reducing our use and minimizing our impact on the environment by making careful decisions about what products we use and when we really need to use them.

- All of the copier paper we use contains 50 percent post-consumer material. We are piloting the use of 100 percent post-consumer paper in anticipation of implementing its use on a utility-wide basis.
- The paper we use for our mailings is certified by the Forest Stewardship Council.
- We use soy ink on all of our printed publications.

6,000 Students reached by our utility educator each year



REACH OUT AND TEACH

Tomorrow's utility customers are in classrooms today, so it's a priority for us to help students understand how power, water and rail services improve their quality of life and their surrounding environment.

With one educator, Tacoma Public Utilities does exactly that, reaching about 6,000 public and private school students in our service area each year.

Like the wires, pipes and tracks that connect our customers, our education program makes connections for students and teachers to understand how we generate electricity, deliver safe water and switch rail cars. We also hope to connect students to careers by explaining the work we do and and providing visits to our work places.

In addition to classroom teaching, our educator helps teachers develop science and safety-oriented utility curriculum, and manages tours of our facilities. In 2010, 1,700 students took tours of Tacoma Power's dams, Tacoma Water's Green River Watershed and the Port of Tacoma on Tacoma Rail's trains.

LOOKING AHEAD

While we have a strong history of environmental accomplishments, we're always thinking about what's next. To start, Tacoma Public Utilities' Fleet Services is undertaking a vehicle utilization study to identify underused vehicles and equipment for possible disposal or reassignment. Information from the study will also help us identify additional opportunities for increasing fleet efficiency, such as consolidating vehicle use.

We will develop a dashboard to improve our ability to measure, evaluate and improve the reduction of waste and energy use from our facilities. That, along with the development of a green building policy, will help us operate our buildings and facilities more efficiently.

Employee participation in commute trip reduction activities is increasing steadily. To continue that momentum, we will participate in a state rideshare survey to help us learn more about our commuting habits and how to improve our rideshare program.

We will also add more environmental education pieces to our programs for elementary and middle school students, including classroom activities related to cultural resources.

TACOMA POWER A Hydro Utility

Tacoma Power has a long, proud history of being a "hydro" utility, meaning the vast majority of our power is generated through hydroelectric dams. Hydro power is a clean, renewable energy resource that uses water to generate electricity without burning fossil fuels or polluting the air.

Our four hydroelectric projects generate about three billion kilowatt hours of electricity each year, enough to serve about half of our customers' power needs. Most of the power the utility buys also comes from hydropower produced at other Northwest hydroelectric projects.

Our first hydroelectric powerhouse dates back to 1912. Our commitment to operating hydroelectric facilities safely and responsibly is a century strong, and continues today. In 2003, the Nisqually River Hydro Project was certified as low impact by the Low Impact Hydropower Institute's voluntary certification program, designed to help identify and reward hydropower projects that are minimizing their environmental impacts. And, we've made some recent strides that serve our customers – and the environment – very well.



- In 2010, Tacoma Power received a long-term federal license to operate the Cushman Hydroelectric Project through 2048. That license, along with having the licenses we've received for our other hydroelectric projects, means we can assure our customers that we will be able to continue to generate clean, renewable power for many decades to come.
- Tacoma Power obtained a federal stimulus grant that's helping us build a new powerhouse at Cushman Dam on the north fork of the Skokomish River. The new powerhouse will generate an estimated 2.7 average megawatts of clean, renewable energy from water that's currently being discharged and diverted without recovering the energy. That energy will serve about 1,900 homes and will help Tacoma Power meet state-mandated renewable energy requirements.
- Tacoma Power will also construct a new, innovative fish collection and passage system that will introduce salmon and steelhead runs upstream of Cushman Dam.
- We recently completed a \$50 million rebuild at the Mossyrock Dam, which included replacing the turbine runners, wicket gates and transformers and rebuilding the generators for two, 150-megawatt hydroelectric generating units that Tacoma Power originally put into service in 1968. Those improvements will allow Mossyrock Dam to generate about 4.7 more average megawatts of electricity with the same amount of water – enough to serve about 3,300 additional homes with clean, renewable hydroelectric energy. The incremental hydro generation will also help Tacoma Power meet state-mandated new renewable energy requirements.

CUSTOMERS KNOW THEIR POWER TO SAVE ENERGY

Tacoma's energy conservation story is one of aggressive leadership, planning, action and, ultimately, success.

While energy conservation programs have been part of our energy resource strategy for several decades, new management initiatives beginning in 2006 brought about a swift but thoughtful ramp up in program options and utility staff.

As a result, we expanded our energy-efficiency programs for residential, commercial and industrial customers. Through the programs, customers can receive grants, rebates, incentives and, in some cases, zero-interest loans.

For residential customers, the programs include home weatherization, refrigerator recycling, and the purchase of rebated compact fluorescent lights and energy-efficient clothes washers. For commercial customers, we offer money for efficient lighting projects, office and food service equipment, new construction projects and custom retrofit projects, to name a few.

The programs are good not only for the utility but, more importantly, our customers. A typical homeowner or business owner can expect to save 10 to 25 percent of their energy costs by taking advantage of one or more of Tacoma Power's programs. As a result of their participation in conservation programs in 2010 and 2011 alone, residential and commercial/industrial customers saved about \$7 million on energy costs, and the savings will continue from there.

In 2010, we set a goal to conserve at least 5.4 average megawatts of electricity, an amount that exceeded our state-mandated conservation targets. Customer participation in our energyefficiency programs allowed us to surpass that goal and save 8.39 average megawatts – enough energy to power about 5,890 homes.

In recognition of our success, the Bonneville Power Association awarded Tacoma Power its inaugural Award for Excellence in Energy Efficiency in 2011.

Energy conservation is our first-choice resource in meeting the energy needs of our customers. At around \$30 per megawatt hour, it costs much less than wind, solar and other renewable power sources. Conservation is the only resource we will need to meet our increasing power demand through at least 2022.

"It was a good deal for this facility. The less energy we consume, the better for everyone."

Gary Watson of Simpson Lumber, which is saving more than two million kilowatt hours a year after installing energy-efficient lighting and controls with a Tacoma Power rebate.



"The NW Energy Coalition applauds Tacoma's energy efficiency achievement, which illustrates the tremendous opportunity for capturing lowcost resources that reduce Tacoma residents' energy bills. The Coalition is thrilled that Tacoma is demonstrating the central role that cost-effective energy efficiency, along with renewable energy, plays in creating a clean and affordable energy future."

Nancy Hirsh, NW Energy Coalition policy director



SPECIES PROTECTION – ONE HABITAT AT A TIME

Tacoma Power makes fish and wildlife protection a priority, and it shows.

We sustain natural and hatchery salmon populations in the Cowlitz River while providing fish for harvest. When it was first constructed in 1968, the hatchery was the largest salmon hatchery in the world. We now use the hatchery to support the restoration of naturally spawning salmon while maintaining harvest, and we accomplish that with our newly rebuilt, state-of-the-art facilities.

After many years of litigation, we've entered into a new partnership with the Skokomish Tribe at the Cushman Hydro Project that enables us to continue to generate clean, renewable electricity. Our agreement includes more natural river flows for fish, two new hatcheries, adult and juvenile fish passage, and many habitat protection measures.

Hydroelectric projects alter the patterns of migrating fish, but we've made a lot of progress helping fish around our dams. We're installing two large juvenile fish collectors – one at the Cowlitz River Project and the other at the Cushman Hydro Project.

We protect many acres of shoreline habitat at all of our hydro projects, and we're working to secure more at the Cowlitz River Project. We place large trees and gravel in the Cowlitz River to give young salmon places to rest and hide from predators.

Tacoma Power protects more than 20,000 acres of land for wildlife at our four hydro projects. We recently bought 750 more acres of land at the Cushman Hydro Project to protect and enhance wildlife – adding to the 2,700 acres we already own in the area. Our habitat supports creatures large and small: elk, deer, beavers, squirrels, hawks, ducks, snakes and toads.

By partnering with the Pierce County Noxious Weed Control Board, we've greatly reduced invasive Japanese knotweed on our wildlife lands at the Nisqually Hydro Project.

Tacoma Power is serious about healthy habitat and species protection.

Salmon eggs at the Cowlitz Salmon Hatchery.

RECREATION AND CULTURAL RESOURCES

In addition to acquiring land to preserve and restore wildlife and fish habitat, Tacoma Power has developed recreational resources for public enjoyment of these scenic areas. We own and operate four campground parks and offer other recreational opportunities at our hydro project reservoirs. More than 280,000 people camped at or visited our parks in 2011. We take pride in our friendly service, clean facilities and outstanding maintenance.

It's important to us to go beyond just providing people a place to spend a few hours. We want to know how we can improve our services, and we use customer feedback to do it.

- We measure our performance by reaching out to our campers with an online survey and use their feedback to improve. In 2011, 97 percent of respondents said they would recommend our campgrounds to a friend.
- In the last few years, we added 100 campsites and built a boat launch at Taidnapam Park, extended the boat launch at Mossyrock Park and completed a new group camp at Alder Lake Park.
- We connect to more customers by partnering with Washington State Parks for reservation services. Camping reservations have more than doubled since 2005.



280,000 Number of people who camped at or visited our parks in 2011 Our wildlife lands are also open to the public for non-motorized recreation like birdwatching and hiking.

Tacoma Power's newly completed Cowlitz Salmon Hatchery Visitor Center provides unique opportunities for people of all ages to explore the life cycle of salmon in engaging, hands-on ways. They learn how Tacoma Power facilities support the production, recovery and conservation of healthy salmon populations. We anticipate that the visitor center will become a destination along the White Pass National Scenic Byway.

Our active cultural resources program includes site and artifact protection, public education and training for employees. We cataloged thousands of prehistoric artifacts from the Skokomish River area and transferred them to the Skokomish Tribe in 2011. Routine visits are made to all archaeological sites on Tacoma Power property throughout the year to monitor and preserve their condition. We also work with a local archaeologist and other agencies to ensure that our hydroelectric projects operate without disturbing areas of cultural, historic or prehistoric importance.

LOOKING AHEAD

Tacoma Power will continue working to fulfill its commitment to providing clean, renewable hydropower in an environmentally responsible manner. A downstream fish passage system and two hatcheries are in the design phase at the Cushman Hydroelectric Project; the fish collection systems and hatcheries will support stocks of salmon and steelhead in the Skokomish River. We are also planning to design and build a new downstream fish collector at Cowlitz Falls, which is expected to be operational in 2016.

As it has been in the past, saving energy will be a key environmental goal for Tacoma Power. We will continue to fine-tune our energy conservation programs to achieve 5 to 6 average megawatts of energy conservation per year.

Our Transmission and Distribution group will save energy by more accurately controlling end-of-line voltages. Those improvements result in energy and CO₂ savings for both our distribution system and our customers by lowering the voltage while ensuring adequate power is available.



TACOMA POWER ENVIRONMENTAL MILESTONES

1912 - 1968	Four hydroelectric projects started producing power
1968	Cowlitz Salmon Hatchery operation began; largest hatchery in the world at the time
1976-1978	Tacoma Power put increased emphasis on energy conservation programs and standards
1992	Purchase of 7,000-acre Peterman Hill brought the Cowlitz Wildlife Area total to 15,000 acres
1995	All regulated PCB electrical equipment removed
2000	Launch of EverGreen Options, a renewable energy program offered to commercial and residential customers
2001	Fleet switched line trucks to biodiesel
2003	Fleet adopted first hybrid electric cars
2003	Nisqually River Project certified by the Low Impact Hydropower Institute
2006	Automated metering technology reduced field visits for service connections and
	disconnections, saving employee time and vehicle use
2006	Shops Building attained LEED certification
2007	Tacoma Power participated in removing dikes to restore the Skokomish River estuary
2007	Fleet added plug-in electric hybrid cars
2007	Facilities group began an electronics recycling program
2010	Conservation group exceeded conservation goal, achieving 8.39 average megawatts of savings
2010	Cushman Project received amended federal license; settlement agreement signed to develop environmental protection and enhancement plans
2010	Mossyrock Powerhouse turbine and generator upgrades completed
2011	Tacoma Power received the first-ever "Award for Excellence in Energy Efficiency" from the Bonneville Power Administration
2011	Electric-vehicle charging stations installed at Tacoma Public Utilities administration
2011	building and a community location
2011	Pilot project to install LED lights in Tacoma Public Utilities parking lot completed
2011	Facilities group participated in City pilot program for composting food waste
2011	Tacoma Power achieved annual conservation goal of 5.4 average megawatts

TACOMA WATER Straight from the Source

Providing high-quality drinking water has been a long and steady investment by Tacoma Water on behalf of the communities we serve. The struggle for Tacoma's water supply began more than a century ago, when dangerously poor quality water and unreliable service drove city leaders to buy the water system in 1893. After years of technical, legal and political battles, Tacoma's long-term access to plentiful water was assured when the development of the Green River supply was completed in 1913. Civic leaders, as well as the general public, showed enormous foresight and fortitude to accomplish that feat.

As a result, the Green River – which begins in the Cascade Mountains near Stampede Pass – serves as Tacoma Water's primary water supply, delivering highquality water via snow melt, seasonal rains and groundwater. Due to the location of Tacoma Water's intake on the Green River, customers have benefited from our highly reliable, low-cost, gravity-based drinking water supply system. While some areas of our system require a minor amount of pumping to maintain pressure, the vast majority benefit every day from this from this gravity-based system that requires no additional energy source.

Tacoma Water owns only 11 percent of the 148,000-acre watershed, but we vigorously protect the water supply by controlling access, patrolling watershed lands to reduce the risk of wildfire and other water quality impacts, and maintaining agreements with other landowners. In addition, we meet with the landowners annually to ensure our activities keep the Green River water supply pure and fresh.

We also own 24 wells in and around Tacoma. The majority of the groundwater we use comes from wells in the South Tacoma well field. Our wells pump water from aquifers – underground layers of water-saturated sand and gravel. The South Tacoma wells pump from very productive underground aquifers. We began developing the wells in South Tacoma in the early 1900s and now have 14 wells with the capacity to pump 55 million gallons per day. The wells, which supplement our water supply from the Green River, are a critical element to the past and present of our utility, and our customers' future drinking water supply.

CUSTOMERS KNOW THEIR H₂O

Since the 1980s, Tacoma Water has committed itself to designing and running an effective conservation program to help ensure enough water remains available regionally to meet the needs of people, animals and the environment. We've focused on developing long-term, sustained conservation activities in a balanced program including both utility and customer conservation measures.

Our conservation programs are designed to increase customer awareness of water conservation, provide incentives for reduced water use and reduce water losses within the system. We offer our residential customers a variety of ways to help them reduce their water use, including providing free efficient showerheads and faucet aerators, which also reduce their bill. In 2011, we started a custom rebate program for commercial customers to help offset the purchase price of efficiency upgrades such as efficient fixtures and kitchen equipment.

Conservation education is another focus for us. Through brochures, workshops, public events, signage at water efficient gardens and the City of Tacoma's EnviroHouse, Tacoma Water actively educates the public on water conservation.

The general goal of Tacoma Water's conservation program is to protect and preserve resources and to reduce per capita water use levels for both residential and commercial customers. Our more specific water conservation goal for 2011 to 2017 was adopted by our Public Utility Board in June 2010 and is one of the more aggressive goals in the region: Reduce our water system's production by 8.4 percent, measured in gallons per capita per day. Meeting that goal will ensure more water will be left in the river for fish, wildlife and recreation. It should also benefit our rate payers by pushing expensive system development projects further into the future.

HABITAT AND SPECIES PROTECTION

Tacoma Water manages natural resources to benefit people and our environment. In past generations, when resources were plentiful, water utilities could focus solely on delivering water to their customers. More recently, as healthy ecosystems have become increasingly scarce, water utilities are challenged to consider their effects on other public resources such as wildlife, fish and the habitats that sustain them. Tacoma Water works with natural resource agencies, the Muckleshoot Indian Tribe and other stakeholders to protect habitat and conserve resources in recognition of the following:



Healthy fish populations require access to habitat. In 2006, we completed construction of a trap and sort facility at our Headworks Dam on the Green River that will open more than 60 miles of habitat to salmon and steelhead. We are also replacing any fish-blocking stream crossings on our forest roads with bridges or larger culverts to open habitat for fish.

Healthy fish populations require adequate stream flows. We're doing our part to maintain and rebuild populations in the Green River by guaranteeing that water withdrawals will not reduce stream flows below levels deemed necessary to provide spawning and rearing habitat, cool water and other features required for healthy populations.

Healthy populations require good habitat. We have developed and implemented a 50-year Habitat Conservation Plan that protects 32 species of fish and wildlife and ensures our activities are consistent with protection requirements under the Endangered Species Act. Measures include the creation of habitat for fish and wildlife, using best management practices to limit our impacts, and research and monitoring to ensure our actions are meeting the plan's goals.

Healthy populations require a collaborative effort. Tacoma Water plays a key role in the planning and implementation of salmon recovery in the Duwamish/Green and Puyallup/White River watersheds. We are also working with adjacent landowners to protect water quality and with resource agencies to manage wildlife populations on our lands.

Together, those actions reflect our commitment for sound stewardship of the natural systems in the Green River Watershed that sustain fish and wildlife and provide the water upon which we depend. At Tacoma Water, we understand that managing natural resources to provide for a healthy environment also provides for a high-quality water supply to meet our present and future needs.



The Green River, Tacoma Water's primary water supply.

33 million

Size in gallons of the covered reservoirs now in service at the McMillin Reservoir

WATER QUALITY

The challenges of providing safe and reliable water from the Green River and the wells in South Tacoma have continued through the decades as expectations and regulations have evolved. Through steady investment between the 1920s and 1980s, Tacoma Water established the Green River Watershed as the highly protected water source it remains today.

A decade ago, Tacoma Water, along with regional partners, completed the most substantial expansion in water supply since the development of the Green River supply. It combined infrastructure expansion with major commitments to environmental stewardship, ensuring supply for generations to come.

In 2010, Tacoma Water initiated one of the biggest projects in its history: filtration of the Green River. The filtration facility, once completed, will be capable of treating up to 150 million gallons per day. The total estimated cost of the project is approximately \$210 million, with construction scheduled to occur between spring 2012 and late 2014. Filtration will ensure that our customers receive water of the highest quality.

We recently put two, 33-million-gallon reservoirs into service, replacing the large, open basins at the McMillin Reservoir complex near Puyallup. The project is the culmination of more than 30 years' worth of working to close the open storage reservoirs. Covering or replacing open reservoirs has delivered enormous dividends in the elimination of needed retreatment and chemical expense, improved safety and security, and improved quality of the water we bring to our customers.

LOOKING AHEAD

While we take pride in our past accomplishments, Tacoma Water continues to strive for excellence in the stewardship of the resources that are entrusted to us. A major goal for Tacoma Water, and many other stakeholders, groups and agencies, is the reintroduction of salmon and steelhead above Howard Hanson Dam in the upper Green River Watershed. Tacoma Water is actively engaged with the U.S. Army Corps of Engineers to design their fish passage facility to help juvenile salmon and steelhead successfully migrate downstream through the dam. Development of this facility is the last hurdle to make this goal a reality. And, as always, preserving land and reducing risk of contamination will continue to be priorities in the protection of river and groundwater supplies.

In addition, Tacoma Water will continue to implement its programs to reduce per capita water use levels by both residential and commercial customers to help us meet our 2017 conservation goal.



TACOMA WATER ENVIRONMENTAL MILESTONES

1912	Headworks Dam built on Green River
1914	Department of Agriculture and City of Tacoma agree to conserve, protect Green River water supply
1951	Lands in the Green River Watershed acquired to protect water supply
1987	Tacoma Water and Simpson Kraft worked to reduce company's water use by almost one-third
1991	Water conservation plan developed
1992	Tacoma Water and other groups worked to transfer adult steelhead above Howard Hanson Dam
1995	Muckleshoot Settlement Agreement and Friends of the Green River Settlement signed to better manage the watershed for fish, wildlife, recreation
1996	Forest Management Plan developed to maintain water quality, improve species habitat
2000	Water conservation goal developed: Reduce system use by 10 percent over 10 years
2001	Habitat Conservation Plan developed, protecting 32 species of fish and wildlife on our lands
2002	Utility and other groups worked to transport elk into watershed
2003	Utility and U.S. Army Corps of Engineers entered into agreement for Additional Water Storage Project
2005	Elk forage pastures created; fish habitat improvements made; fish-blocking culverts in watershed removed
2006	Auburn Narrows Natural Area created with King County, providing meadow and wetland habitat
2006	Completed construction of a trap and sort facility at the Headworks Dam that opened more than 60 miles of habitat to salmon and steelhead
2008	Became charter sponsor for the Alliance for Water Efficiency
2010	Little Eagle Lake in Green River Watershed purchased to preserve from development
2010	10-year conservation goal achieved; new conservation goal adopted
2012	Completed construction of two, 33-million-gallon covered reservoirs at the McMillin Reservoir complex

The Green River.

TACOMA RAIL A Positive Track Record

From the beginning, the Tacoma Municipal Beltline – now Tacoma Rail – has focused on providing efficient service to our customers while contributing to local growth. In the early 1920s, the Beltline Railroad moved both people and freight with electric trolley cars and two electric switching locomotives. By the late 1930s, the Beltline had discontinued passenger service and purchased a steam locomotive to move freight rail traffic around the tidelands area.



Tacoma Rail grew to a fleet of 18 diesel electric locomotives by 2005. Mindful of the need for conservation and sustainability, we then began to make changes that reflected our commitment to environmental stewardship objectives.

In 2005, Tacoma Rail switched to the exclusive use of ultra-low sulfur diesel, which contains 15 parts per million of sulfur, as opposed to the 3,000 to 5,000 parts per million in regular diesel fuel. We also began installing Eco Tip fuel injectors on the locomotives, another step toward reducing particulate emissions.

After establishing funding partnerships with regional clean air agencies to advance regional air quality improvement objectives, we began to install idle reduction equipment on the locomotives in 2007. By 2011, Tacoma Rail surplused older locomotives that were incompatible with the idle reduction equipment and replaced three others with new locomotives that comply with special Environmental Protection Agency emissions standards.

As a result of that modernization and environmental concern, our locomotive fleet has been condensed to 14, which also reduces our maintenance costs and helps keep our rates competitive. Tacoma Rail's idle reduction efforts have saved more than 440,000 gallons of diesel fuel and reduced greenhouse gas emissions by 209 tons since 2007, and we anticipate that those numbers will continue to increase each year.

ECO-FRIENDLY LOCOMOTIVES

Three new efficient, fuel-saving locomotives are now on Tacoma Rail's tracks, thanks in part to a grant from the Environmental Protection Agency administered by the Puget Sound Clean Air Agency. The \$2.5 million EPA grant was matched by \$1.8 million from Tacoma Rail.

The original locomotives, built in 1960, were replaced with reconstructed locomotives containing state-of-the art electronics and new diesel engines with a hefty goal attached: Reduce particulate pollution in the non-attainment area surrounding the economically essential Tacoma Tideflats.

The project's impact on the environment is significant: Emissions from the locomotives will be reduced by up to 75 percent, and efficiency will increase substantially. In fact, we estimate that annual fuel savings from each new locomotive will approach 40 percent.

LOOKING AHEAD

Tacoma Rail is acquiring a locomotive simulator to train our locomotive engineers without the use of an actual locomotive. We'll look for new opportunities to modernize our fleet and continue to be good environmental stewards well into the future.



TACOMA RAIL ENVIRONMENTAL MILESTONES

1944	First two diesel-electric locomotives purchased; electric locomotive use discontinued
1947	Steam locomotive use discontinued
2005	Rail fleet expanded to 18 diesel-electric locomotives and switched exclusively to ultra-low sulfur diesel fuel
2006	Eco Tip fuel injectors installed to reduce fuel consumption and particulate emissions
2007-2009	Idle reduction systems installed on 10 locomotives
2010	Older locomotives not compatible with idle reductions systems surplused; fleet reduced to 14
2011	Three old locomotives replaced with ones equipped with systems to reduce emissions and increase efficiency

440,000 gallons

Diesel fuel saved through idle reduction efforts





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