

A City's Approach to Cost-Effective Sustainability
**The City of Gresham, Oregon, Partners
with Veolia Water North America to
Achieve 100 Percent Sustainability at
Wastewater Treatment Plant**



In Gresham, Ore., a partnership between the Gresham City Council and Veolia Water North America has worked together to implement a sustainable operation for the City's wastewater program. This paper details the innovative techniques implemented by this partnership to decrease power consumption, while increasing renewable energy production.

A WHITE PAPER BY VEOLIA WATER

Veolia Water has actually surpassed Gresham's up-time requirement each year since the start of its partnership, ensuring co-generator up-time that's better than 94 percent annually. As a result, electricity costs at the facility have been reduced by an average of \$23,100 a month.



Decreasing power consumption, while increasing renewable energy.

Today's headlines often offer glimpses of companies pledging to "go green" and seek true sustainability, but it's not very often when an entire city makes that pledge and then starts achieving it.

That's about to change. Thanks to the strong leadership of Mayor Shane Bemis and an environmentally-focused City Council, community-wide support and public-private partnerships, Gresham, Oregon, has big plans to become a national model of sustainable planning, design and development.

Over the last several years, Oregon's fourth-largest city (located 16 miles east of downtown Portland in Multnomah County) has examined every aspect of its operations and identified practical, cost-effective and achievable ways to 'go green.' This includes Gresham's utilities, buildings and vehicle fleets, as well as its approach to urban design and planning, business development and the everyday habits of employees at all City facilities.

One area where the City identified potential to significantly reduce its carbon footprint and lower energy costs was the Gresham Wastewater Treatment Plant, a 20 million gallon-per-day facility that serves 108,000 customers and treats wastewater from the cities of Gresham, Fairview and Wood Village.

The city's goal was ambitious: It wanted the wastewater plant to start producing energy, rather than consuming it. Gresham commissioned the design of a cogeneration engine that uses methane gas produced from the plant's digesters (a natural byproduct of the wastewater treatment process) to generate its own electrical power and heat. It also sought a partner with the experience and technical expertise who could successfully manage plant operations to reduce energy usage while ensuring maximum output from the cogeneration engine.

Partnering to Raise Sustainability While Lowering Costs

In 2005, the City selected Veolia Water North America (Veolia Water), the world's leading wastewater partnership services provider. The driving factor in the competitive decision was Veolia Water's experience (the company serves more than 650 North American communities) as well as its access to experts and technical solutions and its strength in asset management. Gresham's decision to partner with Veolia Water was influenced as well by the company's shared commitment to environmental stewardship.

As part of a seven-year, \$21 million contract with Gresham, Veolia Water agreed to the City's request that it guarantee an 90 percent or better "up-time" of the co-generator, even though the engine had not yet been built. (Up-time is the term for how long a co-generator can run – 100% is considered 24/7 uptime and is technically impossible given the need for maintenance).

As with most things in Gresham, the plan has gone exceedingly well. Veolia Water has actually surpassed Gresham's up-time requirement each year since the start of its partnership, ensuring co-generator up-time that's better than 94 percent annually. As a result, electricity costs at the facility have been reduced by an average of \$23,100 a month. Even more important from a sustainability perspective, the co-generator has enabled the plant to produce more than 50 percent of the energy it uses by capturing naturally-occurring methane gas from the wastewater process and transforming it into energy.

Recognizing the City's vision to become 100 percent energy independent, Veolia Water North America is working with the city to achieve its goals beyond the use of a co-generation system. This includes the city's decision to install one of the largest land-based solar arrays in the Northwest at the wastewater treatment plant.

Solar panels are expected to provide eight percent of the plant's total power each year and Veolia Water North

"The city's goal was ambitious: It wanted the wastewater plant to start producing energy, rather than consuming it."



America is responsible for tracking that energy. Through the combination of the cogeneration engine and solar panels, more than 70 percent of the facility's energy is generated on site from the sun and naturally-produced methane gas.

In addition to solar power and co-generation, the city's vision was to utilize wind power to further increase the renewable energy which powers the plant. Although traditional energy charges would typically be treated as a pass-through cost, Veolia Water has partnered with the City to split the costs of a wind energy surcharge 50/50. As a result, the wastewater facility picks up additional energy from another renewable source – wind. Veolia Water tracks the energy from wind power (which the City purchases from Portland General Electric).

Further, the City is experimenting with other forms of energy production to exceed 100 percent independence – which means that the City's goal is for the plant to actually generate more energy than it uses, via the installation of additional renewable energy systems. To this end, Veolia Water and the city are looking at doubling

the co-generation systems and generating energy from grease waste.

Although creating sustainable energy is part of energy independence, the other half is reducing energy usage. Working with the city, Veolia Water has reduced the average monthly energy use from 556,000 kilowatt-hours (kWh) per month to 452,000 kWh per month (an approximate 20% reduction in energy use), and is currently moving into construction with various process improvements, including replacing the digester mixing system with new technology that uses much less energy and high-efficiency aeration blowers.

By proactively managing the wastewater treatment plant's assets, Veolia Water and the City are able to drive down capital maintenance and replacement costs, increase asset lifecycle, improve reliability and reduce unnecessary and inefficient energy usage. Gresham city officials anticipate the asset management program will help reduce costs of the city's assets by 15 to 25 percent over the term of the contract. Money saved can be used for other municipal priorities.

“The best part of this project has been helping the City of Gresham meet its incredibly progressive vision for the city. We're looking forward to implementing new technologies and programs to drive down energy usage and increase use from renewable sources.”

– Paul Proctor, Veolia Water North America Project Manager, Gresham, Ore.



Gresham's Reputation Grows

The City of Gresham is garnering recognition for its efforts around sustainability:

- ❖ In 2009, the partnership with Veolia Water helped garner a Platinum Peak Performance Award from the National Association of Clean Water Agencies. The wastewater facility was honored for achieving 100 percent compliance with National Pollutant Discharge Elimination System permit requirements for five consecutive years, and is actually now at Platinum Plus (6 consecutive years of perfect environmental compliance).
- ❖ In 2008, the City of Gresham and Veolia Water received a Public-Private Partnership Award from the National Council of Public-Private Partnerships for its collaboration on this innovative, renewable energy solution.
- ❖ In 2006, the League of Oregon Cities recognized Gresham with an Award of Excellence, while the American Public Works Association Oregon chapter awarded the City with a Julian Award for Sustainability.
- ❖ Gresham also is ranked #4 on the U.S. Environmental Protection Agency's (EPA) list of Green Power Communities based on its annual green power usage.

Through the public-private partnership with Veolia Water North America, the City of Gresham has been able to steadily decrease power consumption at its wastewater treatment plant, while increasing renewable energy production by capturing methane. It is achieving its vision of becoming a completely sustainable city and expects to eventually generate and capture more power than it needs so it can actually become a sustainable energy provider as well.



Gresham city officials anticipate the asset management program will help reduce costs of the city's assets by 15 to 25 percent over the term of the contract. Money saved can be used for other municipal priorities.



About Veolia Water and the Gresham Partnership

As the world's leading provider of comprehensive water and wastewater services and technologies, Veolia Water brings 150 years of experience, leading-edge technology and unmatched management skills to municipal and industrial customers worldwide.

Based in Chicago, Veolia Water North America is the leading provider of comprehensive water and wastewater partnership services to municipal and industrial customers, providing services to more than 14 million people in approximately 650 North American communities. The company is part of the Veolia Environnement companies in North America, with 30,000 North American employees providing sustainable environmental solutions in water management, waste services, energy management, and passenger transportation.

In 2005, the Gresham City Council chose to partner with Veolia Water in a public-private partnership to implement a best-in-class operation for Gresham's wastewater program, with the goal of protecting the community's infrastructure assets while improving the environment. For more on Gresham, please visit <http://tinyurl.com/4hzgnfn>.

Veolia Water, the water division of Veolia Environnement, is the world leader in water and wastewater services and technological solutions. Veolia Environnement (NYSE: VE and Paris Euronext: VIE) is the worldwide reference in environmental services. With more than 312,000 employees, Veolia Environnement recorded annual revenues of \$50 billion in 2009. Visit the company's Web sites at www.veolianorthamerica.com and www.veoliawaterna.com.

