

Energy independence: How the City of Gresham uses biogas and solar energy to fuel wastewater operations

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Ten years ago, the wastewater treatment plant in Gresham, Oregon (just east of Portland) was the City's biggest energy-consumer, but a lot has changed since then.

The plant is now making the same amount of electricity as it consumes in a year, using biosolids from wastewater treatment and fats, oils and grease as well as solar energy to produce power while also reducing energy costs. As a result, the plant now exports excess energy back to the local utility.

Treating water and pushing it through multiple processes is so energy-intensive that a wastewater treatment plant is often a community's single

biggest energy consumer. That's not the case with the wastewater plant in Gresham, Ore.

The secret to the plant's success is biogas, which

is naturally produced by wastewater in the form of methane. By simultaneously generating energy and heat from that methane (a process known as cogeneration), the Gresham plant can produce its own energy without having to purchase it.

Organic matter from wastewater now fuels 92 percent of the Gresham plant's power – right on site – using a process that turns sludge into biogas. The City has doubled its biogas production since 2012, when haulers started trucking in wastewater filled with fats, oils and grease from Portland-area restaurants and food service establishments.

In March, the Gresham facility had its first "net zero month" and its monthly kWh energy costs for wastewater treatment have plunged from fifty thousand dollars a month to zero. It's expected to recoup its sustainable investment within eight years.

Said Gresham Mayor Shane Bemis:

While our State government is toiling over low carbon fuel standards at the moment, we just turned our largest energy consumer into a net energy producer. There is nothing better than being able to make tangible, real-world changes, and see first-hand the impact they can have. We're innovating with technology to save money for our residents and doing the right thing for the environment.

The city's success in achieving energy-neutral status at its wastewater plant did not occur overnight. It's the direct result of the city's longstanding, ambitious vision.

Gresham believed that with the right expertise, its wastewater plant could produce



energy instead of being the city's largest energy consumer. In 2005, the city looked for a private-sector partner who could help reduce energy usage while ensuring maximum output from the cogeneration program. Veolia North America was chosen based on the company's experience serving more than 500 North American communities, along with access to experts and a company promise to ensure more than 90 percent "uptime" of the cogeneration unit.

Said John Shawcroft, Veolia's project manager at the Gresham plant:

We like to solve environmental problems at Veolia, like helping to reduce energy usage. In Gresham, we can combine Veolia's technical expertise with the city's vision and its local knowledge. And we've helped the city turn its largest energy user into a plant that not only produces its own energy, it exports energy.



Reduction in energy use plays a major role in meeting the city's goals, since wastewater plants traditionally consume tremendous amounts of energy. Even before the second cogeneration unit was added, the energy reduction program reduced average energy use of 525,000 kilowatt-hours (kWh) per month to

409,000 kWh per month (an approximate 20% reduction in energy use). Veolia has worked closely with the city to implement an asset management program that is expected to reduce capital maintenance and replacement costs 15 to 25 percent over the term of the partnership, further reducing energy use. The company also exceeded the city's goals for uptime, delivering 92 percent uptime annually, reducing energy usage an average of \$23,100 a month.

In addition to its cogeneration units, the city installed one of the largest land-based solar arrays in the Pacific Northwest, producing approximately 8 percent of the plant's total

power each year.

Mayor Bemis explained:

Here's the awesome thing. What we did here is not a secret formula. It is replicable at thousands of treatment plants all over the United States.

The mayor added that developing forward-thinking policies and programs creates a better environment for the world's children to inherit.

Said William J. DiCroce, president and COO of Veolia North America's Municipal & Commercial Business:

Everything Mayor Bemis said about investing in the future of our children is true. Many of our environmental problems are solvable if we set a big vision and go after it. Veolia can help replicate Gresham's success for cities that want to help build a better future while saving costs.

The Gresham Wastewater Plant is a 20 million-gallons-per-day facility, serving 108,000 customers and treating wastewater from the cities of Gresham, Fairview and Wood Village. It has received a wide variety of awards, including the U.S. Conference of Mayors' Climate Protection Award, the Gold Award by the National Association of Clean Water Agencies, the Public-Private Partnership Award from the National Council of Public-Private Partnerships and the Sustainability Award from the Pacific Northwest Clean Water Association.

The partnership contract with Veolia was renewed in 2012. Under the contract, Veolia manages all operations and maintenance of the city's secondary activated sludge wastewater treatment plant, a beneficial use biosolids management program, industrial pretreatment program analyses, cogeneration operation, laboratory services and 9 lift stations.

Mayor Shane Bemis' 2015 State of the City address can be found [here](#). More information on the partnership can be found [here](#).

If you'd like to replicate this success story in your community, [let us know](#).

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