



## Portland plant turns city waste into power

**Biogas will supply about 50 percent of energy used to treat sewage at Columbia Boulevard plant**

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BY LIBBY TUCKER

The Portland Bureau of Environmental Services last week celebrated the opening of its new \$8 million co-generation facility at the Columbia Boulevard wastewater treatment plant.

The facility will burn methane gas produced from the city's solid waste to generate more than 12 million kilowatt hours of electricity, or about enough energy to power 1,000 Northwest homes, each year. The energy produced will provide about half of the treatment plant's daily power demand, cutting its annual energy bills by about 40 percent.

"It's a lot of electricity, and it's all used on site for wastewater facilities," David Tooze, a senior energy specialist with the Portland Office of Sustainable Development, said. "It's environmentally friendly and the ultimate benefit goes to ratepayers."

Cost savings on the renewable energy project amount to about \$700,000 a year that will help offset the cost of increased energy demand from the east side big pipe when it comes online in 2011, according to BES.

Combined with a 25-percent Business Energy Tax Credit from the Oregon Department of Energy and a \$362,000 cash incentive from the EnergyTrust of Oregon, BES expects to recover the investment within 12 to 15 years.

"This project is more than double the size of any other co-generation project we've worked on," said Peter West, director of renewable energy programs for the EnergyTrust, which has helped finance similar projects for the city of Gresham and Forest Products Industries.

After several upgrades to optimize the facility's energy efficiency, BES was faced with the challenge of designing a process to purify the biogas, which holds less energy and contains more impurities than natural gas.

"This was a new type of project for the city of Portland and it had lots of design challenges," said Kevin Orton, a project manager with James W. Fowler Co., the general contractor on the project. "We had to figure out how to hook into the electric grid and it's the first time we used biogas on an internal combustion engine."

In the treatment process, anaerobic digester tanks contain microorganisms that chew the solid waste, converting it into methane gas and carbon dioxide. The process creates 1 million cubic feet of biogas each day, which is fed through a purification process and into the electric generators that work more like a car engine than a home furnace. Extra heat from the generators is then also looped back into the digesters, further reducing the amount of energy used in the treatment process.

Before the co-generation facility started operating, most of the biogas produced during wastewater treatment was simply burned off. Now, the process produces the same amount of carbon dioxide emissions, but the facility produces energy from the waste gas, said Cary Ott, a

