Portland Press Herald Maine Sunday Telegram
EST. 1862



April 29, 2007
FINAL,
Business page F1

**Landfill going on the grid**

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It's hardly a tourist attraction, but the Pine Tree Landfill here is certainly Maine's most-visible dump - a 200-foot mountain of t sprawling across 42 acres on the edge of Interstate 95.

The thousands of motorists who pass the landfill every day can watch trucks and loaders scurrying across the expanding summ But it's what they can't see, behind the mound, that's most surprising: A 50-foot high flame, shooting into the sky like a giant cigarette lighter.

Every day, rotting garbage beneath the Pine Tree Landfill gives off enough methane gas to power thousands of homes and pro heat for industry. Now it's just being wasted. Even worse, as the gas wafts into the atmosphere, it acts as a powerful heat trap that contributes to global climate change.

All that is about to end.

On May 14, the landfill's owners will break ground for Maine's first power plant that converts landfill gas into electricity. When i operating later this year, the $6 million project will generate enough energy to light roughly 3,000 homes for the next 15 years also has the potential, perhaps, to dry lumber or grow vegetables with waste heat from the turbines.

While the 3-megawatt power plant is noteworthy by itself, its larger significance is tied to a second project up the interstate at state-owned Juniper Ridge Landfill in Old Town. Still in the planning stages, a power project there could light more than 15,00( homes for up to 60 years. It would use engines retired from the Pine Tree Landfill.

"As our gas declines here, we can pull the engines out and use them elsewhere," said Don Meagher, planning and developmen manager for Casella Waste Systems Inc., which operates both landfills.

What's happening at Hampden and Old Town reflects a national effort to capture the methane from solid waste landfills, to pro home-grown energy and fight global climate change. New tax credits and other financial incentives have made it profitable for Casella and other waste firms to get into the power business.

"Our landfills aren't that large," said David Burns, who monitors landfill gas activity at the Maine Department of Environmental Protection. "There hasn't been enough gas production to make them worthwhile, and the incentives haven't been there. That's changing."

The United States has at least 2,300 operating or recently closed municipal solid waste landfills. Four hundred have methane p plants, but the U.S. Environmental Protection Agency estimates that 560 additional landfills have the potential to produce enou electricity for 870,000 homes.

At least four other landfills scattered around Maine are candidates to produce energy from methane, Burns said.

These plants also could remove greenhouse gas emissions associated with climate change. Methane is a potent greenhouse ga times stronger than carbon dioxide. Municipal landfills are the single largest man-made source of the gas, according to the EPA

To encourage methane power, Congress included production tax credits for landfill gas projects in the Energy Policy Act of 200 Some New England states that want to encourage renewable power production have put a premium on electricity from landfills Looking ahead, a pending multi-state agreement to fight global warming is expected to include additional financial incentives f removing greenhouse gases from the atmosphere.

"It has created some revenue to offset expenses," Meagher said.

Casella owns Pine Tree and operates Juniper Ridge for the state. It also owns the Maine Energy trash-to-energy plant in Biddef and has two landfill gas plants in New York and Vermont.

Maine has closed 300 municipal landfills over the past 25 years; 12 are still operating. Any landfill that accepts household garb and other organic wastes will generate methane eventually. But to make power production worthwhile, there has to be a large enough output and a system in place to capture the gas.

The Pine Tree Landfill first starting burying waste from the Bangor area in 1975, and now holds 6 million cubic yards. It stoppe taking municipal trash in the 1980s, and is set to close by 2010. Most of the disposal now is ash and other residue from the sta waste-to-energy plants, as well as construction and demolition debris.

But tons of household garbage are decomposing in the core, and although the power potential of the landfill has peaked, Casel estimates there's still enough methane for 15 years of electricity generation.

"We're really harvesting energy from the past," Meagher said.

THINKING MODULAR

A recent tour of the landfill shows how the system works.

Sprouting from the mountain are a scattering of plastic pipes and valves. These wellheads are connected to a network of horiz pipes buried under the landfill. Casella installed the collection system in 2002, not for power, but to control the rotten smell tha offended neighbors. The system sucks up gas and pipes it to a central point, where it's burned by a flare inside a chain-link fer All that remains of the smell - and the energy - disappears in a shimmer of flame buffeted by the wind.

Nearby, workers are preparing to set utility poles where the power plant will rise. The plant is designed by Industry and Energy Associates of Portland, which has done similar projects in Delaware and New Jersey. Cianbro Corp. will build it.

Landfill gas generators aren't set up like big power plants. They're more like modular units. Engineers can measure how much methane a landfill is emitting today. They take an educated guess on how much is remaining, based on the age of the facility, much waste it contains and other factors. Then they plug in a series of one-megawatt engines. Each can be removed as gas ou declines.

The Pine Tree Landfill will have three engines. Casella plans to swap them over to Juniper Ridge, if that project goes forward. T arrangement spreads out the company's capital investment. Along with government incentives, engine sharing makes the Pine project economically viable, Meagher said.

At least four other landfills in Maine are candidates for some form of gas power, according to the DEP.

Topping the list is the large Crossroads Landfill in Norridgewock, which also has a gas collection system installed.

In Bath, the DEP is working with the city to reduce odors from hydrogen sulfide gas. In Fort Fairfield, it's involved with the Tri-Community Landfill, which is leaking methane underground. In Augusta, the DEP saw enough power potential at the Hatch Hill Landfill that new boilers at Cony High School were designed to burn landfill gas, Burns said.

"We're really at the beginning of gas-to-energy projects in Maine," Burns said. "It's really hard to say how many will go forwar

Methane power plants have an added benefit. Like all combustion engines, they give off plenty of waste heat. At other landfills as the one in Burlington County, N.J., engineers recover the heat to warm greenhouses. The New Jersey operation grows flowe and tomatoes; it even includes a fish farm.

Casella is exploring the economics of a greenhouse, lumber-drying kiln or other ventures at the landfill, Meagher said. That cou make Pine Tree Landfill a real tourist attraction some day, a place where tomatoes tossed out 25 years ago are helping to grov vegetables of tomorrow.

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