

# Support for energy from waste is long overdue

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It largely slipped under the radar, but back in February the government directed the Ontario Power Authority to set up a program that would support the early development of energy-from-waste facilities in the province.

Energy Minister Gerry Phillips, in a letter addressed to power authority chief executive Jan Carr, cited the need to test and evaluate new technologies that can turn municipal solid waste into electricity. Already, he pointed out, the government has streamlined the environmental approvals needed to build and operate such demonstration plants.

"The goal of the initiative is to encourage the development of new or improved energy-from-waste technologies with improved environmental performance," wrote Phillips, hinting that the power authority should be prepared to pay 10 cents per kilowatt-hour for any demonstration project that falls within the initiative.

It's a long overdue move for a technology with significant potential.

We're not talking incineration here, despite attempts by critics to brand it as such. There's no burning involved.

What the technology does is use intense heat to break down the molecular structure of the waste. Once this is done, bad molecules are removed and the rest is chemically engineered into clean-burning synthetic gas – similar to natural gas. This "gasification" process is not squeaky clean, but it's better than the alternatives it aims to replace, including landfills on the waste side and coal on the energy side.

The government's directive is encouraging, given the fact that several communities in Ontario – including Durham and York Regions, Hamilton, Sault-Ste. Marie and Ottawa – are moving forward with energy-from-waste plans whether the province supports them or not. They've got a garbage crisis, and if new technologies can manage that problem in an economical way and contribute some clean energy to the grid, why not take a look?

Some – though not all – environmentalists are deeply suspicious and skeptical, and this is understandable. The "technologists" have been making claims since the 1980s about how garbage can be turned into energy gold in an environmentally responsible way. Some municipalities bought the sales pitch, and got burned. Many facilities never got built or failed to deliver on promises, and ended up instead at the centre of nasty legal battles.

But there's good reason to believe this time is different:

The technology has dramatically improved.

Engineers have become much better at controlling the chemical reactions required to bust up and re-assemble garbage molecules.

Approaches have become more efficient.

Attention to emission reductions has become a priority.

And real-time monitoring of pollutants allows for heightened public scrutiny.

The fact that General Electric is getting into the energy-from-waste business is, on its own, a telling sign that the technology has matured.

The economic case is also better. Twenty years ago the tipping fee to send garbage to a landfill wasn't breaking the municipal bank. Today, the cost of transporting Toronto's residual waste to Michigan and paying a landfill to take it has ballooned.

If an energy-from-waste facility can collect that tipping fee instead, and sell the power they produce to a province willing to buy it, the argument that these technologies are "too expensive" fades away.

There are still some challenges to overcome. Gasification is much easier when it's done with a single material, such as wood waste or plastic containers, where the molecular structure is predictable and consistent. Municipal solid waste is a bit trickier because of the variety of garbage it contains – after metals are removed from the stream, what's left is a hodgepodge of plastics, papers, fibres, wood waste and in some places food waste.

GE, and startups such as Plasco Energy, Enquest and Ze-Gen are among the many companies out there fine-tuning the approach. Others, such as Enerkem, Coskata and Cleantech Biofuels are taking similar paths but, instead of producing gas, they're producing ethanol for transportation.

Such challenges are why demonstration facilities are so important. Without them, how will we know they work as promised? And if they do, how can they be properly showcased to the cautiously optimistic? "I think there's nothing wrong with trying out new technologies and seeing what's possible," says Michael Angemeer, CEO of local electric utility Veridian Corp.

Angemeer, also vice-chair of the Durham Strategic Energy Alliance, was part of a mission to Europe last June that toured energy-from-waste facilities in Scandinavia and the Netherlands. He walked away impressed with what's possible if proper attention is placed on emissions.

"The trip was eye-opening," he says. "In Europe they don't consider this as waste; they consider this a fuel like any other fuel."

Energy-from-waste facilities aren't a silver bullet. They shouldn't be relied on. They shouldn't replace recycling and other diversion programs that make sense. They shouldn't stop us from demanding laws that forbid unnecessary packaging, or prevent the creation of policies that attack our throwaway culture.

But they have their place in a hierarchy of approaches, and to dismiss their potential could prove a mistake in the face of a growing waste problem and a certain energy crisis. The province, it appears, is wisely beginning to recognize this.

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## **RECYCLING LIMITS**

One argument against embracing energy-from-waste technologies is that they'll undermine municipal waste diversion programs, which encourage us to reduce our consumption, reuse what we can, and recycle what we can't reuse. The fear is that energy-from-waste facilities

will become monsters we'll have to feed. But expecting 100 per cent diversion of our waste is a utopian view – and it's impossible. The biggest component of any diversion program is the recycling of glass, metals, plastics and paper. Of those, only plastic and paper can be gasified and converted into usable energy.

Is it better to recycle all plastic and paper, or should it be sent to a facility that converts it into electricity?

The answer is simple: both. Plastic and paper aren't recycled as much as "downcycled," meaning every time they are recycled they become a lower-quality product. After two or three cycles they become unusable. Then there are two options: landfill or an energy-from-waste facility. So recycling of plastic and paper, despite the initial environmental advantages, merely delays the inevitable.

Rod Bryden, CEO of Plasco Energy, also questions the existence of municipal "green bin" programs that collect organic materials, such as food waste, and send them to composting facilities or aerobic digester plants. The purpose of these facilities is to prevent the material from rotting in landfills and releasing methane, a greenhouse gas that's up to 23 times more potent than CO<sub>2</sub>.

Bryden argues it would be less costly and better for the environment if organics were left in the regular garbage and turned into electricity using a gasification facility such as the demonstration plant Plasco operates in Ottawa. Taxpayers wouldn't have to pay extra for a separate green bin collection system, emissions would be lower, and electricity produced from organics would offset dirtier forms of power on the grid.

It's a controversial suggestion.