

Cities are harvesting spoiled food to create new source of natural gas

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Canadian cities are discovering a new energy source: food waste

It can be hard to imagine household food waste producing anything more than a putrid odor. But it's also a potential energy source.

In Canadian municipalities with green bin programs, household organics are collected at the curb and sent to a central facility where they are broken down by microorganisms. One result of this process is something called raw biogas.

A growing number of these cities are upgrading that biogas (from a methane concentration of 55 to 60 per cent to 90 per cent or more) to produce what is called renewable natural gas (RNG). RNG is similar in quality to conventional natural gas and can be injected into a natural gas pipeline to heat buildings and fuel vehicles.

The City of Toronto, for example, is getting into the RNG business by expanding and upgrading one of its organics processing facilities. Once the equipment is installed this year, the biogas will be "purified" to RNG and injected into Enbridge's natural gas grid.

"It seems like such a no-brainer, in my mind," said Carlyle Khan, a director in Toronto's solid waste management department. "I don't understand why other municipalities aren't doing it."

According to a 2013 study by the Canadian Biogas Association, capturing biogas from all potential sources (agriculture, landfill, wastewater and municipal organics) could produce 2.42 billion cubic metres of RNG annually and reduce Canada's greenhouse gas emissions (GHG) by 37.5 million tonnes — the equivalent of removing 7.5 million cars from the road.

Biogas harvested from residential organic waste alone could produce 140 million cubic metres of RNG and reduce GHGs by 2.2 million tonnes.

RNG is still very much an emerging field. According to Jennifer Green, executive director of the Canadian Biogas Association, there are only about 12 RNG facilities in operation or due to come online in Canada.

Green said the City of Hamilton was the first Ontario municipality to use its wastewater treatment facility to generate RNG. In 2006, it installed a 1.6-megawatt cogeneration unit at the Woodward plant to produce electricity and heat facility buildings.

Meanwhile, Surrey, B.C., has been processing the 65,000 tonnes of organic material it collects annually from residences and apartment buildings at a new facility that opened last spring. Harry Janda, Surrey's solid waste manager, said the city is using RNG to fuel its garbage trucks and is on target to reduce its carbon footprint by about 22,000 tonnes a year.

And then there's Stratford, Ont. It's embarking on a \$15.5-million RNG project in partnership with its wastewater treatment plant operator, Ontario Clean Water Agency, which is set to open in 2020-21. Ed Dujlovic, Stratford's director of infrastructure and development services, said his city is in the final stages of inking a 20-year deal to sell RNG in Ontario to FortisBC Energy on the West Coast.

Dujlovic said as soon as the deal is done, it "gives the roadmap for everyone else."

— Showwei Chu