Cities across Canada have made significant strides in 2018 in renewable natural gas (RNG) development

Closing the loop with RNG

As Canada's RNG capacity builds, a growing number of municipalities are considering upgrading biogas to RNG to manage food and organic waste, produce local energy and reduce greenhouse gas emissions.

The production of RNG offers an attractive waste management solution for closing the loop between organic waste and fuel. Converting organic materials to RNG captures energy from waste, reduces odour, and produces renewable fuel for solid waste fleets. Municipalities also have the option to use RNG for onsite energy needs or partner with local natural gas utilities to sell RNG for injection in the natural gas grid.

"Biogas and RNG systems address many of the energy, environmental, and economic priorities in our Canadian municipalities" says Jennifer Green, executive director of the Canadian Biogas Association "Collaborative partnerships and supportive policies are essential to spur development and realise these benefits."

There are currently ten operational RNG facilities in Canada, with four more in substantial development and an increasing number of municipalities in advanced planning stages. The projects include landfills, wastewater treatment plants, and anaerobic digestion of source separated organic waste materials.

As illustrated by the advancement of three Canadian projects in 2018, successful municipal RNG development is supported by city level initiatives, partnership and support from local natural gas utilities alongside a drive to reduce food and organic waste going to landfills. Cities in British Columbia, Ontario, and Quebec are using their capacity to create solutions to climate change by generating and utilising RNG.

British Columbia

The Surrey Biofuel Facility in Surrey, British Columbia officially opened on 9 March 2018. The $68 million (€45.5 million) facility converts curbside organics into RNG to fuel the City's fleet of natural gas powered waste collection and service vehicles as well as the new district energy system. At full capacity the facility will divert 115,000 tonnes of organic waste from the landfill, produce 120,000 GJ of RNG and 45,000 tonnes of nutrient-rich compost annually. British Columbia's largest natural gas distributor, FortisBC, partnered with the City of Surrey and has been involved in the project for injection, metering, and quality assurance. Surplus RNG will be sold to the FortisBC natural gas grid.

The facility enables full implementation of the City's Waste Management Plan and helps the City process diverted organics resulting from the Metro Vancouver organics ban that was implemented on 1 January 2015. The ban is part of a strategy to divert 80% of the region's garbage from landfills by 2020. After a six month educational phase, enforcement came into effect on 1 July 2015 and waste loads with more than 25% visible food were surcharged at 50% of the cost of disposal.

Overall the reception to the organics ban has been positive with the majority of residents and businesses seeing the organic material as a resource rather than a waste material. The organics ban in Metro Vancouver has resulted in increased organics processing capacity and environmental and economic benefits within communities. For example, the Surrey Biofuel Facility created more than 15 new full-time, long-term jobs in Surrey. It is estimated the facility will reduce GHG emissions by approximately 49,000 tonnes per year, the

City of Toronto CNG fueling station

Surrey biofuel facility

equivalent of taking over 10,000 cars off the road, which eliminates the City's corporate carbon footprint of 17,000 tonnes per year.

Ontario

On 20 July 2018, the City of Toronto announced a partnership with Enbridge Gas Distribution (EGD) to build its first RNG facility. The facility will be located at the City's Dufferin Organics Processing Facility and utilise the biogas produced from processing Toronto's green bin organic waste. Through the partnership, EGD will install technology to clean and convert the biogas produced through anaerobic digestion into RNG and inject it into its natural gas distribution grid. Once in the grid, the RNG can be used to fuel the City's solid waste collection fleet, generate revenue in external markets or a combination of the two.

The Dufferin Organics Processing Facility expansion will increase its organic processing capacity from 25,000 to 55,000 tonnes. The expansion and the RNG project are expected to be complete in the autumn of 2019. Once up and running, it is estimated that the RNG facility will produce approximately 5.3 million cubic metres of RNG annually, enough to fuel 90% of the City's Solid Waste collection fleet. The City has already invested in the infrastructure with two operational CNG fill stations and 90 CNG trucks on the road.

Increasing rates of organics diversion are expected with the release of the Food and Organic Waste Framework on 30 April 2018 by the Ontario Government. The Framework supports Ontario's shift to a circular economy and contains a number of strategic commitments that can have a positive effect on renewable natural gas development in Ontario. This includes banning food and organic waste from ending up in disposal sites with a phase in beginning in 2022 and sector specific waste reduction and resource recovery targets ranging from 50 to 70%. The Framework recognises that sending food and organic waste to landfill is ultimately unsustainable and puts additional strain on our environment by requiring new landfill space. It is forecasted that Ontario will need 16 new or expanded landfills by 2050 if no progress is made to keep organic resources out of landfills. Managing resources more effectively will benefit Ontarians, the environment and the economy.

Québec

On 26 January, 2018, the City of Saint-Hyacinthe, Québec confirmed that its biomethanation plant had entered full service, along with the injection of the RNG produced there into Énergir's natural gas network. This is a milestone facility because Saint-Hyacinthe is the first city in the province to take organic waste and turn it into RNG for its own use in buildings and vehicles and for injection into the local pipeline. The City of Saint-Hyacinthe and Québec's largest natural gas distributor, Énergir, reached an agreement in 2014 for the purchase and injection of RNG produced by the City's RNG facility over a 20-year period.

Since 2010, the City has been treating its wastewater sludge with biomethanisation. The facility was expanded to accept organics from 25 surrounding municipalities and agri-food waste from local businesses and include equipment to upgrade raw biogas. The $80 million (€53.6 million) project processes 150,000 tonnes of organic waste per year and produces 13 million cubic metres of RNG annually. Tapping into the potential of organic waste has turned what once was a cost centre into a strategic asset that generates savings and revenues while reducing the collective environmental footprint.

Development of the Saint-Hyacinthe project was a response to a provincial policy that will ban the landfilling of organic waste starting in 2020 and contributes towards achieving the environmental objectives set out in the Québec policy of residual materials management and action plan 2013-2020. The project enables the City to cut its energy costs, reduce GHG emissions and produce clean energy for local consumption.

In Canada, RNG is a proven, effective technology to convert something originally thought of as waste into a resource while protecting the environment and contributing to the economy. ●

For more information:
The Canadian Biogas Association will host the 2019 Value of Biogas West and East conferences in Vancouver and Toronto, giving attendees the opportunity to visit RNG facilities in Surrey and Toronto and network with peers and industry representatives. Registration opens October 1, 2018. Visit biogasassociation.ca/vob2019 for more details.

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Saint-Hyacinthe facility