



Bioenergy Insight

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Biogas on the rise

A decade of rapid growth in Canada

Change of heart

Winning over biomass sceptics



Regional focus: Canada

The number one source of information internationally for **biomass**, **biopower**, **bioheat**, **biopellets** and **biogas**!

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Industry insight with DMT Clear Gas Solutions

Canada's agricultural and dairy market

Today's Canadian biogas and renewable natural gas (RNG) market holds much promise. Since 2010, Canada has accumulated 12 RNG projects with 16% of the total biogas and RNG projects using agricultural feedstock¹. With the country only tapping into 13% of its biogas potential, by far the biggest growth opportunity is in the agricultural sector, where crop residues and animal manure make up two-thirds of the country's easily available biogas resources.

Growth in the dairy RNG industry

As a major technology supplier for Canada, DMT has been actively developing the agricultural RNG market for some time now. This past summer, DMT replaced a water wash system with its membrane separation technology for a mid-size dairy farmer in British Columbia (BC) that wanted to focus more on farming and less on operating a RNG facility. Later this year, DMT will complete another biogas upgrading system for a large dairy farm in Ontario.

So how does a country with only 12 RNG projects suddenly get two RNG projects within a year? Essentially, the groundwork was already laid. By working on projects in the US, DMT reduced lead times, perfecting a standardised, pre-engineered model. Additionally, the development of its extensive network of local vendors and partners in the last six years has improved project execution overall.



With more than 150 biogas and RNG systems worldwide, DMT understands Canada's potential and will continue to develop its RNG market

A standardised approach immediately benefited DMT's presence in the dairy RNG industry both in the US and Canada, because it offers versatility and wide application to dairy farms, regardless of size. For dairy farmers or project developers, this model is a huge incentive as one can be online quicker, selling RNG sooner, and generating immediate revenue. For example, the BC dairy farmer was able to complete installation, commissioning, and start-up, using only DMT remote support, with this 'plug and play' model. This was not initially planned but proved effective to maintain project timelines during the pandemic.

Canada's potential

What's held back the agricultural biogas sector in

Canada? For one, most of the anaerobic digesters thus far are on mid-size dairy farms (approximately 250 milking cows) that co-digest dairy manure with off-farm organic waste. With the average Canadian dairy farm holding 89 milking cows, limited farm size makes it difficult for these projects to achieve feasibility for RNG production². Additionally, other factors known very well in the biogas industry to hold back RNG projects in general, such as distance to the natural gas pipeline, feedstock ratio, and price of RNG, have also affected the market's potential – but not for long.

The RNG industry eagerly awaits the finalisation of Canada's Clean Fuels Standard (CFS) later this year. Coming into regulatory effect in December 2022, the goal of the CFS programme is to reduce emissions, accelerate

the use of clean technologies and fuels, and create jobs in a diversified economy. It will do so by obligating liquid fuel suppliers to reduce the amount of carbon created in the production of their fuels. Thus, these regulations will provide an incentive to develop RNG projects that would otherwise struggle to compete in today's energy markets. According to Environment and Climate Change Canada's estimates, the liquid-class CFS will reduce greenhouse gas emissions by more than 20 million tons in 2030 – equivalent to taking 5 million cars off the road each year³.

Furthermore, Canada's Minister of Agriculture and Agri-Food announced in March funding of up to \$116,800 (€78,400) for the Canadian Biogas Association (CBA) to accelerate sustainable agricultural development⁴. If



A mid-size dairy farm in British Columbia replaces a water wash system with DMT's Carborex® MS, a membrane separation system, to extract CO₂ from the methane (CH₄) stream

Canadian policy mimics the US Renewable Fuel Standard, dairy farms will offer low carbon intensity scores and increased RNG prices. These revenue opportunities create a strong business case and incentivise all projects, small or large in scale. But until the new regulations take

effect, Canada will continue to rely on a combination of exporting RNG to the US and utility incentive programmes.

Regarding small-scale dairy farming, a model to overcome the scale-related economic barriers that project developers encounter is the adoption of clusters.

In a cluster, multiple farms contribute feedstock to a centralised anaerobic digester facility. A study conducted by the CBA found a high RNG price, 50-50 feedstock of manure and off-farm organics, or an average cluster of four dairy farms spark farm clusters with a high

probability of producing RNG in a financially viable way⁵. DMT has installed several dairy RNG facilities in the US using this cluster model. ●

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