

## Renewable Natural Gas Initiative

### FREQUENTLY ASKED QUESTIONS

Capital Regional District | April 2020

#### 1. What is landfill gas?

Landfill gas is generated when organic materials within the landfill decompose. It is primarily composed of methane and carbon dioxide — types of greenhouse gases (GHGs) — with small amounts of water vapour, oxygen, nitrogen and trace gases. The composition and amount of gas generated varies based on factors such as amount, type and age of waste, as well as environmental conditions such as moisture content. However, no matter the composition, the GHGs in landfill gas have the potential to cause harm to the environment and contribute to climate change.

#### 2. How does the CRD manage landfill gas?

CRD's management of landfill gas is directed by several provincial government regulations, design guidelines and criteria, as well as Hartland-specific management plans, and WorkSafeBC. The BC Landfill Gas Management Regulation requires landfills generating more than 1,000 tonnes per year of methane (including Hartland Landfill) to develop a plan that targets 75% collection efficiency in four years. A plan was completed for Hartland Landfill and submitted to the Ministry of Environment & Climate Change Strategy in April 2012, with an implementation target of the end of 2016.

In 2018, Hartland Landfill generated 7,909 tonnes of methane, based on the ministry's recommended gas generation model. Approximately 64% of this gas was captured, which is within estimated ranges according to the Landfill Gas Management Plan.

Methane is a very powerful greenhouse gas emission and by capturing landfill gas, the CRD is significantly reducing the GHG emissions from the landfill. The CRD has a responsibility to ensure we have done everything we can to reduce the greenhouse gas emissions generated by the landfill by capturing landfill gas, and to channel captured gas into something that benefits the community. You can find more information about CRD's landfill gas management and efforts to reduce GHG emissions from the landfill, in the [Hartland Landfill Operating and Environmental Monitoring Report](#).

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#### 3. What is renewable natural gas?

Renewable natural gas is created when landfill gas is captured and purified. It is then injected into the natural gas distribution system to heat homes and businesses, facilities and fuel vehicles. Renewable natural gas is interchangeable with traditional natural gas, but it is generated from biogas produced by the waste in the landfill, rather than fossil fuels. This gas is considered carbon neutral, because it is repurposing existing carbon within the carbon cycle, rather than extracting and burning new sources of carbon. This results in GHG emissions reductions overall. The more renewable natural gas that can be injected into the natural gas system to heat homes, businesses or fuel fleets, the less reliance there is on extracting natural gas from fossil fuels.

#### 4. Why was RNG chosen instead of expanding the currently green power system that creates electricity?

The volume of biogas being produced at the Hartland Landfill has exceeded the capacity of the current gas-to-electricity plant and the existing plant is reaching the end of its useful life. This led CRD to evaluate two options: expanding the existing power generation equipment to sell more electricity to BC Hydro, or install a biogas upgrading facility to upgrade biogas into renewable natural gas.

A lifecycle GHG assessment of the two options found that upgrading landfill gas to RNG will reduce the region's GHG emissions by approximately 264,000 tonnes of CO<sub>2</sub>e over the 25-year project life, a significant improvement over the electricity scenario, which would result in a 2,800 tonne reduction. The recent comprehensive review of BC Hydro, which resulted in the cancellation of the current standing offer program, means that upgrading landfill gas to renewable natural gas was also a better choice economically, with a much stronger business case.

#### 5. What is the production process? Will the CRD have to build a big gas plant?

Landfill gas is mostly made up of methane, carbon dioxide, and contaminant gases. The CRD has a series of gas collection wells installed at Hartland to collect landfill gas and stop it from escaping into the atmosphere and enable beneficial use. To upgrade the gas, it needs to be cleaned to remove carbon dioxide and any other contaminant gases until the biogas contains only methane and a small amount of nitrogen, making it almost impossible to distinguish from conventional natural gas.

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There are several different processes that can be used to do this and the CRD has not yet determined the upgrade technology. This decision will depend on lifecycle GHG emissions and cost. The upgrade equipment used to clean the biogas will have a footprint approximately the size of a shipping container and will be located at the existing site of the gas-to-electricity plant at Hartland.

#### 6. How much will this initiative cost? Where will the funding come from?

The CRD doesn't yet know the final costs, however the initiative will only proceed if CRD can fully recover the cost of the initiative through the sale of renewable natural gas to FortisBC.

#### 7. How will the gas get from the landfill to the FortisBC distribution system?

Renewable natural gas can blend seamlessly with conventional natural gas in existing distribution infrastructure running throughout the province. An extension to bring the Fortis distribution network to the Hartland Landfill will be constructed by Fortis, who installs distribution lines routinely in the capital region.

#### 8. Where will RNG be used? Who will be able to use the gas from Hartland Landfill?

Renewable natural gas can be used in any application that uses conventional natural gas including within homes, facilities and for transportation. The terms that CRD has negotiated with FortisBC allow the CRD to designate the RNG that is produced at Hartland for use within the CRD's operations, municipal operations, or the operations of regional agencies. The CRD Board will be considering how to best allocate renewable natural gas from Hartland in 2020. Any RNG not used within CRD, municipal or regional operations will be available for purchase through FortisBC.

#### 9. What is the approval process for this initiative?

This initiative has been approved in principle by the CRD Board. Both the CRD and FortisBC have signed an agreement term sheet to the key business elements. Based on the agreed terms, the CRD and FortisBC are working together to develop a supply contract to submit to the British Columbia Utility Commission, the regulating body for FortisBC's operations, for approval.

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#### 10. What is the timeline?

The proposed agreement anticipates FortisBC purchasing anywhere between 140,000 gigajoules to 280,000 gigajoules each year for 25 years. Depending on how long regulatory approval takes, the RNG from this agreement will start being delivered in the first quarter of 2023 or earlier.

#### 11. Shouldn't we be moving away from natural gas and fossil fuels?

As long as the landfill exists, the CRD has a responsibility to treat the methane generated from the landfill in the most beneficial way possible. Generating energy from renewable natural gas allows us to channel the landfill gas into something positive, for the environment and for our community and it shifts our reliance on fossil fuels within the natural gas system.

#### 12. If organics are banned from the landfill, what generates the landfill gas?

It's true that organics are banned from the landfill and aggressive targets have been identified in the region's solid waste management plan. However, even when the targets for reducing organic waste are met, the existing waste already in the landfill will continue to produce gas. The CRD must determine the most beneficial way of capturing the gas and reducing its environmental impact.

#### 13. Is this initiative a precursor for an organics facility at Hartland?

The CRD's solid waste management plan has identified Hartland Landfill as the preferred location for an organics processing facility for over 20 years. The opportunity to channel landfill gas into renewable natural gas is not dependant on how organics are processed. There are community and environmental benefits associated with the shift to renewable natural gas, with or without organics. The CRD Board will consider options for organics processing later in 2020.