

What are natural gas pipeline operators doing about their methane emissions?

About Pipelines is a series, dedicated to sharing the facts about transmission pipelines in Canada and their role in Canadians' lives. This information is provided by the Canadian Energy Pipeline Association (CEPA).

75%

of natural gas is composed of methane.

25x

more potent than carbon dioxide for global warming potential.

15%

of Canada's greenhouse gas emissions are from methane.*

BY THE NUMBERS

Methane – a greenhouse gas

* Source: National Inventory Report 1990–2013: Greenhouse Gas Sources and Sinks in Canada – Executive Summary, Figure S-2 bit.ly/1B8YX6B

Natural gas was discovered in New Brunswick in 1859. Since then Canadians have relied on the cleanest burning fossil fuel to heat our homes, produce electricity and cook our food. In fact, 30 per cent of our energy needs are met by natural gas.

Natural gas reserves are found all over Canada, with the largest reserves in Western Canada. The easiest, safest and most cost-effective way to transport natural gas across the country is through transmission pipelines.

Sometimes, as natural gas is transported through the pipeline, methane – the main component in natural gas – can be released. Emissions from this greenhouse gas contribute to global warming, so natural gas pipeline operators are working together to quantify methane emissions and develop ways to reduce and prevent methane from being emitted into the atmosphere.

Getting to the source

Methane can be released during the operation of a natural gas pipeline through the compressor stations that push the gas through the pipeline, maintenance activities, small leaks and third-party damage.

COMPRESSOR STATIONS

→ **The source: stationary combustion**

Compressor stations are located along the pipeline route to compress and push natural gas through the pipeline. The engines at these compressor stations are powered by fuel, and aren't 100 per cent efficient (just like your furnace at home). This means some of the methane within the fuel is not burned in the combustion process and can be released into the atmosphere.

→ **The solution: more efficient engines**

Natural gas pipeline operators have been replacing older engines at compressor stations, with newer, more efficient ones that burn methane to more effectively reduce emissions.



Burning it off

When a compressor station or smaller section of pipe must be taken out of service, pipeline operators may use a method called flaring to safely burn the gas. This actually reduces the impact of greenhouse gases. When methane is burned, it combines with oxygen to produce water and carbon dioxide – a less potent greenhouse gas. The gas is diverted to an incinerator or flare stack for controlled combustion.



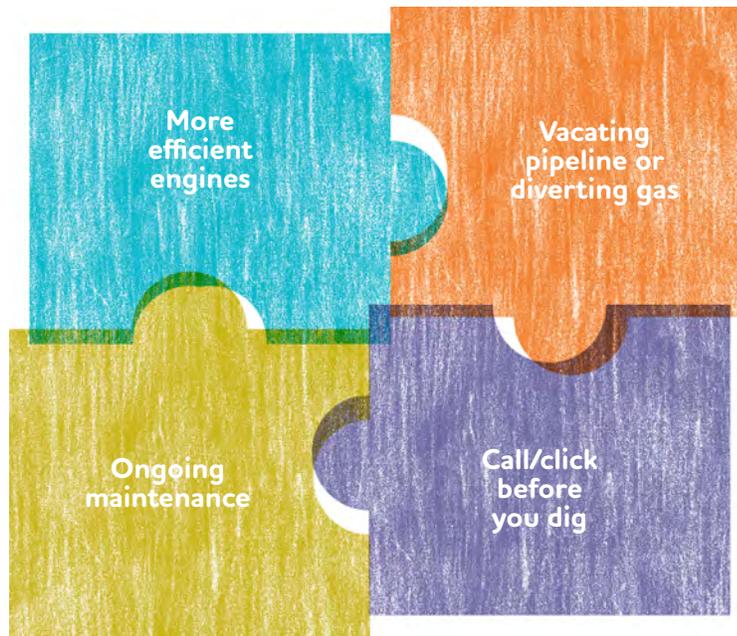
DIVERTING IT

A portable pulldown compressor can be used to divert gas around a section of pipe being removed from service for maintenance.

Methane Management

Managing methane

Natural gas pipeline operators have developed effective solutions to reduce and prevent methane releases.



Emission-reducing practices

- Using Canadian Standards Association regulations for designing and selecting materials
- Installing the most efficient equipment available and replace existing equipment with more efficient models
- Replacing pneumatic devices (uses gas or pressurized air to operate) that leak natural gas during normal operations
- Following the manufacturer's specifications for installation and maintenance of equipment
- Implementing ongoing leak detection and repair programs to find and fix leaks

VENTING

→ The source: maintenance

For safety reasons, pipeline operators may have to release natural gas into the atmosphere as they perform maintenance activities, like checking for corrosion.

→ The solution: vacating the pipe or diverting the gas

Pipeline operators try to reduce the amount of natural gas within a section of pipeline before opening the valve and releasing the remainder into the atmosphere. If it's a large section of pipe, and space is available, the operator may bring in a portable pulldown compressor, connect it to the pipeline and divert the gas around the section that is being removed from service and avoid venting the gas.

FUGITIVE EMISSIONS

→ The source: unintentional pipeline leaks

Sometimes small leaks can happen from the pipeline, equipment and instrumentation, either above or below ground. It's estimated that 80 per cent of emissions are often contributed by 10 to 15 per cent of detected leaks*.

→ The solution: ongoing maintenance

Pipeline operators have thorough maintenance plans to regularly check equipment and make

repairs. This could include replacing seals or regularly changing the packing material around the compressor's rods to prevent any residual gas from escaping during operation.

THIRD-PARTY DAMAGE

→ The source: unauthorized digging activities

Third-party damage is one of the biggest threats to a pipeline. When digging activities like construction take place without the knowledge or consent of a pipeline company, it can result in damage to the pipeline, environment and humans.

→ The solution: Call/Click Before You Dig

Most Canadian provinces have a One-Call Centre or a Call/Click Before You Dig program to alert pipeline owners and operators of excavation and construction projects that could damage a pipeline which should be used by those planning any construction or ground disturbances.

Visit clickbeforeyoudig.com.

Natural gas is an important energy source for Canadians, which is why natural gas pipeline operators are continuously improving their operations to ensure the product arrives safely, with minimal impact on the environment.

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* Source: Clearstone Engineering Ltd.