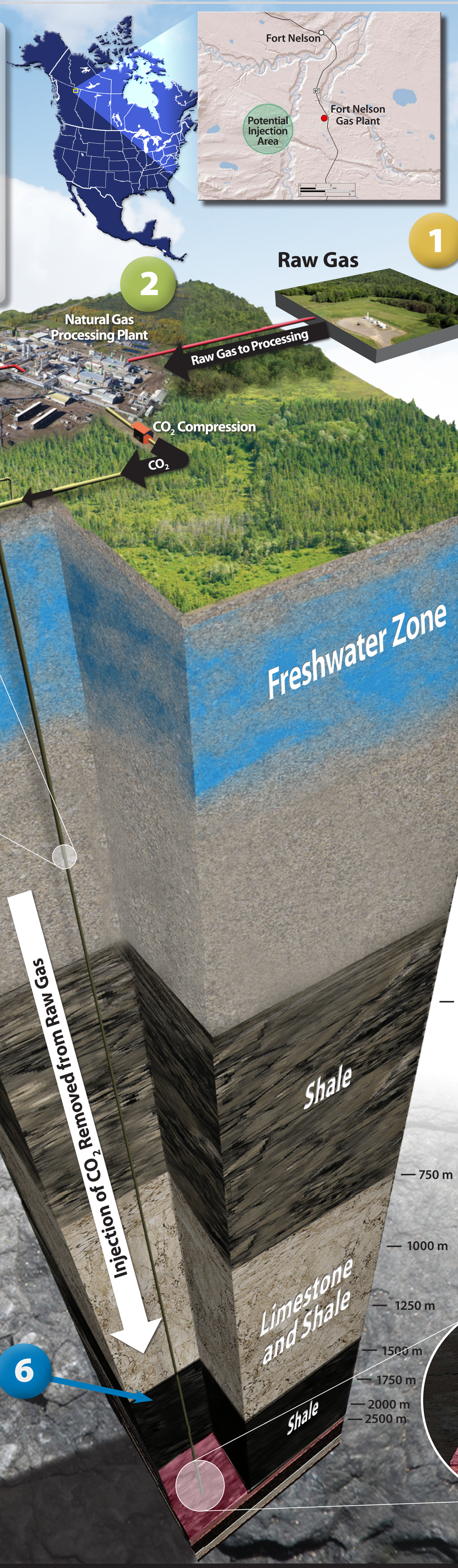
Natural Gas with a Reduced Carbon Footprint

What Is Happening at Fort Nelson?

Spectra Energy's Fort Nelson natural gas processing facility in northeastern British Columbia currently delivers clean-burning natural gas to customers. Spectra Energy is evaluating the feasibility of reducing greenhouse gas emissions through the use of large-scale carbon capture and storage (CCS):

- Carbon dioxide (CO_2) from natural underground processes comes to the surface with raw natural gas.
- The Fort Nelson gas processing plant will capture this formation CO_2 at the processing plant instead of releasing it into the atmosphere.
- The CO_2 separated from the raw natural gas at Fort Nelson will be transported by pipeline to an injection site where it will be injected into a storage zone deep underground.
- Monitoring will help ensure that the CO_2 remains securely stored.

As envisioned, CCS at Spectra Energy's Fort Nelson gas plant will reduce CO_2 emissions by up to 2.2 million tonnes a year, making it one of the largest CCS projects of its kind in the world. CCS is one of many actions that will be needed to reduce concerns about climate change.



1 Raw Natural Gas Contains Impurities

Natural gas accumulates in the tiny spaces of rocks underground and often contains impurities like CO_2 and water. The CO_2 in the raw natural gas comes from natural geologic processes deep underground. This CO_2 in the raw gas is called formation CO_2.

2 Making Raw Gas Sweet Nets CO_2

Raw natural gas has to be purified before it can go to customers and be used in our homes, industry, and vehicles. This happens in a gas processing plant. At the Fort Nelson plant, Spectra Energy is exploring the feasibility of sequestering formation CO_2 deep underground for long-term storage.

3 Using Sweet Gas Reduces CO_2 Emissions

Discoveries of new reserves of natural gas in unconventional formations like shale, tight sands, and coal seams have greatly expanded the supply of natural gas in Western Canada. Natural gas burns cleanly with few by-products. This makes it a good fuel to use in the home for heating and cooking or for industry or transportation. As with any fossil fuel, the burning of natural gas still results in CO_2.

4 Protecting Freshwater Aquifers

The CO_2 injection well is engineered to protect precious groundwater resources. Well construction is governed by British Columbia regulations. Three layers of steel (casing and tubing) and two layers of durable, long-lasting cement separate the contents from the surrounding groundwater. Groundwater sampling, injection well testing, and monitoring further enhance the security.

5 Storing the CO_2

The rock that makes up the storage layer (sometimes called the sequestration zone) is porous and permeable. Some of the injected CO_2 dissolves into the saltwater present in the pore spaces of the rock. Under the natural conditions of the sequestration zone, the molecules of CO_2 gas are packed tightly together. This means that a lot of CO_2 can be sequestered in the pore spaces of the rock.

6 Keeping CO_2 in Place

Shale is a barrier rock that holds gases and liquids in place underground. The CO_2 storage zone at Fort Nelson is overlain by approximately 550 meters of shale cap rock. This cap rock that has held natural gas in place for millions of years will also hold the CO_2 in place.

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PCOR Partnership

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