



# Oil Sands

A strategic resource for Canada, North America and the global market

## Pipeline Safety

### Pipelines are a safe method of transporting oil and gas

Pipelines are a safe, reliable and economical method of transporting crude oil, including oil sands crude, and natural gas, to Canadian and other markets. Spills, leaks and ruptures are rare, representing a tiny percentage of what is flowing through the pipelines. On average each year, 99.999 percent of the oil transported on federally regulated pipelines moves safely. Only very minor amounts of liquids are spilled and are typically confined to pipeline company property and recovered in cleanup operations.

### Oil and gas have been safely transported by pipeline for decades

Pipelines have been used in Canada since 1853. Today, there are about 840,000 kilometres of transmission, gathering and distribution pipelines in Canada, which transported up to 3.8 million barrels of crude oil per day and 14.2 billion cubic feet of natural gas per day.

### Rigorous pipeline regulatory regime

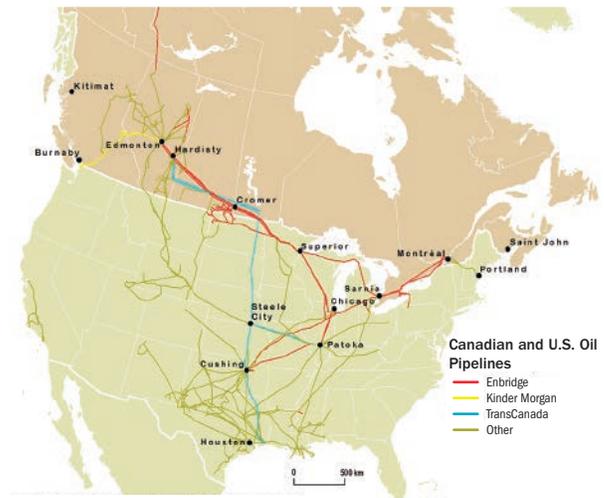
Canada has a comprehensive, rigorous pipeline regulatory system. This pipeline regulatory system starts with the National Energy Board (NEB). The NEB is an independent federal tribunal that has been regulating interprovincial and international pipelines since 1959 to ensure they are safe, secure and environmentally responsible and in the Canadian public interest.

The government is committed to restoring public confidence in Canada's environmental assessment and modernizing the NEB. The goal is to have a robust system that protects Canada's rich natural environment, respects the rights of Indigenous peoples and supports a resilient and sustainable energy sector.

### Decision making on pipeline construction is inclusive

Before any project for an international or interprovincial pipeline can proceed, it must be reviewed by the NEB to ensure it is designed, constructed and operated in a manner that is safe and secure, protects the environment and the public, is economically feasible, and is in the Canadian public interest. An integral part of this process is the engagement of stakeholders, including the public and Indigenous peoples. All NEB hearings for pipeline applications allow for input from the public and Indigenous peoples.

Crude Oil and Refined Petroleum Products Pipelines



Source: Canada Centre for Mapping and Earth Observation, Natural Resources Canada 2014

## Indigenous peoples are an integral part of the pipeline planning and development process

A strategy is being developed to enhance the government's approach to Indigenous consultation and better integrate Indigenous peoples into the pipeline planning and development process. Efforts to advance this objective include working with industry and key federal and provincial agencies and other partners to enhance Indigenous engagement on project planning, development, monitoring, incident response and general pipeline and environmental safety.

The strategy aims to:

- Better identify opportunities for the participation of Indigenous peoples in pipeline-related activities.
- Build mutual understanding between industry, government and Indigenous peoples about key priorities and interests.
- Enhance industry capacity to support participation.
- Strengthen skills training and capacity building to support new employment and business opportunities for individuals and communities.

## Oil sands crude is no more corrosive

Pipelines have been safely transporting oil sands-derived crude oil for more than 30 years. During that time, there has been no evidence of an increased risk of pipeline corrosion compared with other forms of crude.

Both scientific research and industrial experience have determined crude oil from the oil sands is no more corrosive in transmission pipelines than other crudes.

ASTM International, an internationally recognized agency that develops standards tests, recently published ASTM G205 – 10 *Standard Guide for Determining Corrosivity of Crude Oils* for measuring the corrosivity of crude oil under pipeline conditions. Measurements obtained from these tests indicate the corrosivity of oil sands-derived crude oils is no different than that of other crude oils.

The NEB must give approval before crude oil, including oil sands-derived crude oil, can be transported through a transmission pipeline in Canada. To obtain NEB approval, the pipeline operator must identify product specifications such as the corrosive (water) and erosive (mud, sand) content of crude oils that can be shipped through the pipeline. The industry-established limit for the combined basic sediment and water content is 0.5 percent by volume. As a result, all crude oils in transmission pipelines have low corrosivity.

Crude oils, including oil sands-derived crude oils, contain little or no carbon dioxide or hydrogen sulphide. Furthermore, transmission pipelines typically operate well below 70°C. Consequently, naphthenic acid and sulphur compounds that can cause corrosion under refinery conditions (greater than 200°C) are very unlikely to cause corrosion in pipelines.

Transmission pipelines that carry crude oil from the oil sands operate at about the same temperature and pressure levels as pipelines carrying other crude oils.

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