

OIL SANDS

FACT SHEET



Canada's oil reserves are the second largest in the world behind Saudi Arabia and Alberta's oil sands represent 97 per cent of those reserves. Enbridge's pipeline system transports more than 2 million barrels per day of crude oil to refineries in Canada and the United States, with nearly half of those barrels coming from oil sands. Our primary mission is to safely and reliably deliver energy, and therefore we care about the sustainable development of this remarkable resource.

What are the Oil Sands?

Oil sands are a mixture of sand, water, clay and bitumen.

Bitumen is oil that is too heavy or thick to flow or be pumped without being diluted or heated – at 11 degrees Celsius bitumen is as hard as a hockey puck.

Where are the Oil Sands?

Canada's oil sands are found in three deposits – the Athabasca, Peace River and Cold Lake areas in Alberta and part of Saskatchewan. The greatest quantity is found in the Athabasca deposit.

Canada's oil sands are located beneath 140,200 square km of land, equivalent to an area about four-fifths the size of Florida. However only 2% of the total area is mineable. Only 530 square km have been mined to date.

Mineable oil sands only exist under 0.1% of Canada's total boreal forest.

Reserves and Production

- Alberta has proven oil sands reserves of 170 billion barrels.
- Alberta ranks second only to Saudi Arabia in global proven oil reserves.
- Total oil sands area = 140,200 km² (14 million ha) 42,000 ha disturbed by oil sands mining = 0.3% disturbed.
- Oil sands are composed of three main materials: water, sand and a form of heavy oil called bitumen. Once separated, bitumen must be upgraded to convert it into a synthetic crude oil (SCO). Saturation levels of bitumen in the sand also vary from less than 1% to 18%.
- In 2009, bitumen production averaged 1.49 million barrels a day (bbl/d) while conventional oil production averaged 461,300 bbl/d
- Current forecasts indicate that by 2019 bitumen production will increase to 3.2 million bbl/d.
- Marketable oil sands production currently represents 43% of Canada's total crude oil production.

Investment

- From 1999-2009, an estimated \$91 billion was invested in oil sands projects.
- In 2009, industry investment in the oil sands is estimated to be in excess of \$10 billion.
- Almost \$170 billion in oil sands related projects are currently underway or proposed.

Technology

There are two types of oil sands production methods: mining and in-situ.

- **Mining:** Oil sands are dug up by shovel and moved by truck to a cleaning facility where the material is mixed with warm water to separate the oil from the sand.
- **In-situ:** For deeper oil sands reservoirs, some form of in-situ or “in-place” recovery method is used to produce oil sands through wells similar to that of conventional oil production. It’s estimated that approximately 80% of the total proven oil sands reserves will be recoverable via in-situ techniques.

Oil Sands and Greenhouse Gas Emissions

- The oil sands account for one-tenth of one per cent of total global greenhouse gas (GHG) emissions
- Consumers produce approximately 75% of GHG emissions through the consumption of gasoline, diesel and aviation fuel, regardless of whether those fuels originated from oil sands petroleum or conventional oil sources.
- Oil sands companies have reduced per-barrel GHG emissions by more than 30% since 1990 by using new and more efficient technology and process.
- Oil sands operations produce just 1% of the GHG emitted by the power generation sector in the United States.

Oil Sands and Fresh Water

The oil sands industry has made significant progress in reducing the use of fresh water through alternative and innovative practices. The industry is a leader in researching recycling techniques, reusing water and using non-drinkable water as an alternative to fresh water.

- The oil sands industry draws only 1% of the Athabasca River’s flow
- More than 80% of water drawn from the Athabasca River for oil sands mining is continually recycled and put back into operations. No water used in the oil sands is released.

Oil Sands and the Economy

Enbridge currently transports the majority of crude oil produced in the oil sands region and has a significant role to play in the future transportation of this important energy supply. However, it is consumer demand that continues to drive the future development of the oil sands.

Further development of the oil sands has many benefits aside from providing much-needed energy. Oil sands development will provide a substantial economic boost – new jobs, royalties and tax revenues – on both sides of the 49th parallel. Oil sands investment will create \$1.7 trillion in economic activity across Canada over the next two decades, and as production increases, so will demand for materials and services.

- The oil and gas industry currently supports 500,000 jobs across Canada. Given current forecasts, by 2050 the oil sands will be directly or indirectly responsible for 1,000,000 Canadian jobs.
- The oil sands have the potential to generate \$306 billion in royalty and tax revenues for Canadians over the next 20 years.
- Canadians consume approximately 388,000 barrels per day of oil sands crude. Without that oil, it would be equivalent to approximately 84% of all Canadian single-family detached homes going without heat.

Source: www.oilsands.alberta.ca