

The oil sands; economic opportunity, and North American energy security

- Alberta has proven oil reserves of 172 billion barrels, including 170 billion barrels of oil sands bitumen. This is the second largest proven oil reserve in the world. Oil production is 1.8 million barrels/day (1.3 million barrels from the oil sands) and is forecast to reach 3.1 million barrels/day (2.7 million from oil sands) by 2018. Other comparably large oil reserves are primarily in politically volatile regions, where securing supply for North America can impose heavy security, economic costs and uncertainties.
- 17% of person years of employment related to the oil sands occurs outside Canada. The Canadian Energy Research Institute estimates oil sands capital investment at \$218 billion over the next 10 to 12 years.

Alberta is committed to environmentally responsible energy development.

- Oil sands projects must comply with strict legislation and standards aimed at maintaining the health and integrity of Alberta's air, water, land and wildlife, including the reduction of greenhouse gas emissions. Government and industry are also committed to continuous improvement, developing new practices that further reduce environmental impacts.

Water is used responsibly. About 85% of water used by oil sands projects is recycled.

- Oil sands projects have markedly reduced their use of fresh water and continue to improve their processes to further reduce it.
- Water use by oil sands facilities is strictly limited. All oil sands mining projects combined are restricted to withdrawing no more than 3% of the average annual flow of the Athabasca River. During periods of low flow, the combined maximum withdrawal is restricted to about 1.3% of the river's annual average flow. Actual withdrawals in 2008 were 0.6%.

Water testing is stringent.

- None of the water used to process oil sands is allowed to be discharged directly into the Athabasca River.
- The river flows through an oil sands deposit, which has always been a natural source of oil sands in the river. Contaminant levels in other rivers in the area, with absolutely no industrial oil sands activity, are similar to those adjacent to oil sands projects.
- There have been no detectable changes in surface water quality due to oil sands mining.

Air quality is as good or better than many North American cities.

- Air quality in the oil sands region is monitored 24 hours a day, 365 days a year. The air quality was rated good (the highest rating) 98% of the time or more during 2007 based on the Air Quality Index measurement of five key air quality pollutants.

Land impacts are mitigated: Oil sands and the boreal forest.

- Alberta's boreal forest covers 381,000 square kilometres (147,100 square miles). The maximum area identified for oil sands mining is 4,801 square kilometres (1,854 square miles) - about 1.25% of Alberta's boreal forest area.
- The boreal forest is among Alberta's most-protected natural regions. More than 50,000 square kilometres (19,300 square miles) is under provincial or national designation (park). Twenty-three of Alberta's 50 largest protected areas, and Canada's largest national park, are within the boreal forest.
- 80% of the oil sands resource can only be recovered using high technology in-situ methods, with a significantly smaller physical footprint than open pit mines.
- By law, all disturbed land must be reclaimed. Industry has planted more than 7.5 million trees as part of ongoing reclamation efforts. The fully reclaimed 104-hectare (257 acre) parcel of land known as Gateway Hill is a rolling forested area with hiking trails and lookout points.

Government monitors tailings ponds, and they must be reclaimed.

- Tailings are a by-product of all mining operations. Tailings from oil sands mining are collected in ponds and include bitumen, clay, sand, water, organic compounds, salt and trace metals. In the ponds, the sand and clay settle and the water is reclaimed and recycled.
- Tailings ponds include systems for groundwater monitoring and seepage capture to ensure impacts to surface or ground water are mitigated. Government reviews and approves the monitoring and containment systems and conducts on-site assessments and inspections.

Alberta's oil sands account for less than one-tenth of 1% of global GHG emissions and supply almost 2% of the world's oil.

- Alberta was the first jurisdiction in North America to legislate GHG reductions for large industrial facilities, such as oil sands projects.
- Alberta is investing \$2-billion to advance carbon capture and storage technology and projects; one of the largest investments of any jurisdiction in the world.
- Extraction, processing, transportation and consumption of oil from Alberta's oil sands is estimated to produce fewer GHG emissions than, for example, Venezuelan heavy oil, and between 5% and 16% more GHG emissions than other crudes used in North America.
- GHG emissions per barrel of oil produced from the oil sands have been reduced by an average of 38% since 1990. Some facilities have achieved reductions as high as 45%.

Oil sands development results in a positive energy value.

- Oil sands operations use about 30% less natural gas per barrel of production than 10 years ago, and a barrel of oil from the oil sands contains five to six times the energy used to produce it.

Government, community and industry are working together.

- Governments have made significant financial investments in the oil sands area, and work with local communities and industry to identify and address growth pressures.
- Alberta is committed to consulting Aboriginal communities in the oil sands areas. Traditional knowledge can assist in environmental management and enhance policy decisions.