



## Key Alberta Oil Sands Projects

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### Alberta Oil Sands Overview

The oil sands comprise more than 98% of Canada's 173 billion barrels of proven oil reserves. According to Natural Resources Canada, oil sands reserves are spread in 3 distinct areas of northern Alberta that cover a total area of 140,200 km<sup>2</sup>. The 3 areas are:

- Athabasca deposits (largest reserves)
- Cold Lake deposit
- Peace River deposit

Alberta's heavy oil resources contain 1.7 trillion barrels of oil in place. Some 170 billion barrels of this heavy oil, or bitumen, are rated economically recoverable – making them the world's 3<sup>rd</sup> largest crude reserve. Only about 20% of bitumen reserves that lie within 70 m of earth's surface are economically accessible by open-pit mining, while the remaining 80% are buried too deep to be mined and must be recovered in situ (Latin for in place) by drilling wells. This involves much less surface disturbance than mining operations.

In 2013, oil sands were recorded to produce 1.95 million barrels per day. According to Canadian Association of Petroleum Producers (CAPP) it is estimated that the oil sands will produce 4.8 million barrels per day by 2030.

The Canadian oil sands have attracted an estimated \$217 billion of capital investment to date, including almost \$33 billion in 2013.

Currently there are 58 oil sands projects in Alberta that are valued at \$5 million or greater, which account for an approximate total value of \$109.3 billion.

### Top 10 Projects

#### Frontier Oil Sands Mine – Phases 1 & 2

- Estimated cost – \$14.5 billion.
- Company - Teck Coal Ltd.
- Municipality of Wood Buffalo.
- Proposed construction to start in 2016.

The Project consists of 4 phases, and has an expected capacity of 290,000 barrels per day (bpd). Expected life of the mine is until 2057. The mining and bitumen production facility will be constructed in 3 phases. Phases II and III are scheduled to be constructed 3 and 6 years after Phase I. The Frontier Oil Sands Project is expected to begin production in late 2021, with production of bitumen anticipated at 74,000 barrels per day. By 2030 the mine is expected to produce approximately 277,000 bpd. It is projected that over 2.8 billion barrels will be produced over the life of the mine.

### **Fort Hills Oil Sands Mine**

- Estimated cost – \$13.5 billion.
- Company - Fort Hills Energy Corp (Suncor Energy/Total E&P Canada Ltd/ Teck Resources Ltd.).
- Municipality of Wood Buffalo.
- Under construction 2013-2017.

The Fort Hills Mine is located in Athabasca, 90 km north of Fort McMurray. The project is operated by Suncor (40.8%) with co-owners Total E&P Canada Ltd. (39.2%) and Teck Resources Limited (20%). Fort Hills Mine is scheduled to enter production as early as the 4<sup>th</sup> quarter of 2017 and achieve 90% of its planned production capacity of 180,000 bpd within 12 months. Recent estimates have put Fort Hills capacity at approximately 3.4 billion barrels of bitumen. The mine life expectancy is expected to be in excess of 50 years at the current planned production rate.

### **Voyager Oil Sands – 3<sup>rd</sup> Upgrader**

- Estimated cost – \$11.6 billion.
- Company – Suncor Energy & Total E&P Canada Ltd.
- Municipality of Wood Buffalo.
- Under construction 2011-2016.

This project will allow for an additional 200,000 bpd capacity. It will also reduce pollution and improve water management. The project has been delayed, but is expected to go ahead soon, and coincides with the Fort Hills Project. These projects will increase their respective companies bpd output. These 2 projects will have bitumen processed by the Voyageur Upgrader. Bantrel is providing the engineering, procurement, and technical support to construction for the Utilities Silo and complete engineering, procurement, construction, and construction management of the Delayed Coking Unit.

### **Kearl Lake Oil Sands Project - Phase 2 of 2**

- Estimated cost – \$8.9 billion.
- Company - Imperial Oil Ltd.
- Municipality of Wood Buffalo.
- Under construction 2011-2014.

This will be one of Canada's largest open pit mines. It has gained regulatory approval to produce 345,000 bpd. Initial development will allow for 110,000 bpd until full capacity is reached. The life of the mine is estimated at over 40 years. Kearl is one of the highest quality oil sands deposits, with approximately 4.6 billion barrels of recoverable bitumen resource. The mine is expected to provide 600 permanent, full time positions in the next 5 years.

### **North West Bitumen Upgrader – Phase 1**

- Estimated cost - \$8.5 billion.
- Company - North West Redwater Partnership (Canadian Natural Resources Ltd. / North West Upgrading Inc.).
- Municipality of Redwater.
- Under construction 2013-2017.

The Project will have the capacity to refine of 150,000 bpd of bitumen to produce diesel, diluent and other products. The facility is expected to consist of 3 phases and to capture 1.2 million tonnes of CO2 per year

per phase. Expected capacity of phase 1 is 50,000 bpd and it is expected to be operation in September 2017. Currently 1,400 people are working at the site with 2,000 people total working on the project.

#### **Aspen Oil Sands Project**

- Estimated cost - \$7 billion.
- Company - Imperial Oil Ltd.
- Municipality of Wood Buffalo.
- Proposed. Planned construction 2017-2020.

#### **Pike Oil Sands Project**

- Estimated cost – \$3.8 billion.
- Company – Devon Canada/BP Canada.
- Lac La Biche County.
- Proposed construction to start in 2015.

Devon Canada and BP Canada both hold a 50% stake in the project. The thermal oil sands project has an estimated capacity of 105,000 bpd. Phase 1 of the Pike Project is expected to begin construction in 2015 and start producing in 2016.

#### **Carmon Creek VSD Bitumen Project**

- Estimated cost – \$3.45 billion.
- Company – Shell Canada Ltd.
- Peace River.
- Under construction 2014-2015.

Carmon Creek is a thermal in situ project that is 100% Shell owned and will be part of the company's broader production, refining and marketing business across the full value chain in North America. The project is expected to produce up to 80,000 bpd of bitumen using vertical steam drive (VSD) wells. The life expectancy of the project is estimated to be between 10 to 15 years.

#### **Christina Lake Thermal Expansion Project**

- Estimated cost – \$2.7 billion.
- Company – Cenovus Energy Inc./ConocoPhillips.
- Lac La Biche County.
- Under construction 2012-2017.

This project is 50% owned by ConocoPhillips and is located approximately 120 km south of Fort McMurray. It began production in 2000 with a capacity of 138,000 bpd and is currently undergoing a thermal expansion through construction of 3 additional phases. Upon completion, the expected total gross production capacity is pegged at 310,000 bpd. It is considered one of the most efficient SAGD operations in the industry with a steam to oil ration (SOR) of 1.8 in 2013 (uses less water and burns less natural gas to produce steam).

#### **Dover Commercial Oil Sands Project – Phase 1**

- Estimated cost – \$2.5 billion.
- Company – Brion Energy.

- Municipality of Wood Buffalo.
- Under construction 2014-2017.

The project is located approximately 95 km northwest of Fort McMurray. The Dover Project will utilize SAGD technology and phased construction strategy with an ultimate design production capacity of 250,000 bpd of bitumen. It is estimated that the project will recover approximately 4 billion barrels of bitumen over its projected production lifetime of 50 years.

## Opportunities

- Maintenance Repair and Operations (MRO) – over \$30 billion in 2013.
- Specialty mining and extraction equipment/services for Alberta's oil sands.
- Exploration and drilling services; refinery equipment.
- Pipeline construction equipment.
- Environmental remediation technology and services such as faster treatment of tailings, barrier walls to control seepage and off-stream water storage capacity.
- Safety and security equipment and services.

## For More Information

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