

Helping to Meet the World's Energy Needs



Enormous Resource Potential

Oil sands are geologic formations that contain a mixture of heavy oil, water and sand. The oil is called bitumen, defined as oil too thick to flow or be pumped unless it is diluted or heated. While oil sands resource is found in many parts of the world, extremely large quantities are in Canada, estimated to hold approximately 170 billion barrels of resources recoverable with today's technology - an amount nearly eight times larger than total U.S. oil reserves. Canada's oil sands currently yield 1.4 million barrels per day of heavy oil, nearly all of which is exported to the United States, and offer significantly higher production potential.

OIL SANDS DEVELOPMENT STRENGTHENS ENERGY AND ECONOMIC SECURITY

ENERGY SECURITY

The International Energy Agency estimates that global energy demand will increase 47 percent by 2035, due to world economic growth and the expected improvement in living standards, particularly in developing nations. To meet this substantial demand growth, all sources of energy will be needed, with increasing expectations for socially and environmentally responsible development.

Given these realities, the role of such resources as the oil sands in tomorrow's energy mix will be vital. Today, Canada is the largest single oil exporter to the U.S., sending more than 99 percent of its oil exports to the U.S. and about half of which comes from the oil sands. Additionally, Canada's oil sands are located in the Athabasca, Peace River and Cold Lake deposits relatively near the major U.S. Midwestern market and its extensive



transportation, refining and marketing infrastructures. As a result, the oil sands are already helping meet growing U.S. energy needs, while their location in a friendly, stable country is improving U.S. energy supply security.

Production is growing rapidly thanks to active oil industry development, and is expected to more than double to about 3.5 million barrels per day by 2025.

ECONOMIC SECURITY

Greater production from the oil sands would stimulate further economic growth in both the United States and Canada. The importation of this heavy oil already supports thousands of American jobs in the pipeline, refining and marketing industries. The resulting gasoline and diesel fuel production helps power U.S. transportation and thus enables our nation's economic growth.

Further, as oil sands production and investment in Canada rises, demand for U.S. goods and services increases significantly. This export demand is expected to add \$34 billion to the U.S. gross domestic product in 2015, and \$42 billion in 2025.

OIL SANDS OVERVIEW

CONOCOPHILLIPS' OIL SANDS INVESTMENTS

ConocoPhillips is well-positioned in the Canadian oil sands, ranking as one of the leading SAGD producers and acreage holders. Our approximately one-million-net-acres lease holdings are estimated to hold more than 15 billion equivalent barrels of resource. The company's current reserves include one billion barrels from the oil sands, with total net production before royalties of about 78,000 barrels per day. Both are expected to increase substantially during coming decades. Our lease holdings are in areas suitable for the SAGD recovery method.

ConocoPhillips' oil sands assets include:

- **Surmont Project.** This multiphase 50/50 joint venture with Total E&P Canada, operated by ConocoPhillips, is currently in its second phase of development. The first two phases have gross regulatory capacity of 110,000 barrels per day. Significant expansion potential exists. Surmont is currently producing 11,000 barrels per day net to ConocoPhillips from Phase 1.
- FCCL Partnership. This 50/50 partnership between ConocoPhillips and Cenovus Energy is operated by Cenovus. It includes the Foster Creek and Christina Lake projects now under way, the proposed Narrows Lake project and other properties. Foster Creek and Christina Lake have



ConocoPhillips' Oil Sands Assets

regulatory approval to expand to 428,000 barrels per day. Current production of 67,000 barrels per day net to ConocoPhillips is rising rapidly, with expansions under development in Christina Lake, and additional expansions proposed for both Foster Creek and Christina Lake.

• Other Lease holdings. Significant lease holdings are located in the Thornbury, Clyden and Saleski areas. ConocoPhillips has 100 percent working interest in these properties, and is considering future development.



OIL SANDS DEVELOPMENT

Steam-assisted gravity drainage (SAGD) is used when bitumen deposits are too deep to mine. A pair of horizontal wells is drilled from a central well pad. Steam enters the ground through the steam injection well (top), and the steam heats the bitumen to a temperature at which it can flow by gravity into the producing well. Because of the extreme thickness (or high viscosity) of the heavy oil, special methods are required to recover it and make it fluid enough to flow through pipelines to refineries for transformation into gasoline and other products. There are currently two commercial production methods. Steam-assisted gravity drainage (SAGD) can be used to recover 80 percent of the oil sands resource, which on average lie 1,300 feet below the surface. Mining is used for the 20 percent of the total recoverable reserves located within 250 feet of the surface.

With the SAGD process, a pair of horizontal wells is drilled from a central well pad. In a plant nearby, generators transform water into steam, which then travels through above-ground pipelines to the wells. Steam is injected into the ground via the top well, and heats the oil until it becomes thin enough to flow to the producing well at bottom. Steam injection and oil production occur continuously and simultaneously. The resulting oil and condensed steam mixture is then piped to a processing plant. There, the water is recycled for reuse, while the bitumen is blended with synthetic crude oil for pipeline transportation to the United States for refining.

FURTHERING RESPONSIBLE AND SUSTAINABLE DEVELOPMENT

At ConocoPhillips, we are committed to sustainable development, and to conducting our business in a way that promotes economic growth, a healthy environment and vibrant communities, now and in the future. We are also committed to being a company of choice for employees, business associates, suppliers and our local communities.

We are working to address the cumulative impacts of developing the oil sands on the air, water, land and local communities. Among our efforts, we are successfully applying best practices, technological innovations and comprehensive stakeholder engagement. For more information, visit the Canadian Sustainable Development Portal at *http://www.cpcsustainability.com/where-we-work/oilsands/oil-sands-introduction.cfm*.

Sources: Statistical and analytical information is from the International Energy Agency, U.S. Energy Information Administration, Cambridge Energy Associates, and ConocoPhillips.