

# Canadian Oil Sands: Helping Solve America's Energy Needs for the Next Century

## RESEARCH BRIEF

Sponsored by: TELUS Business Solutions

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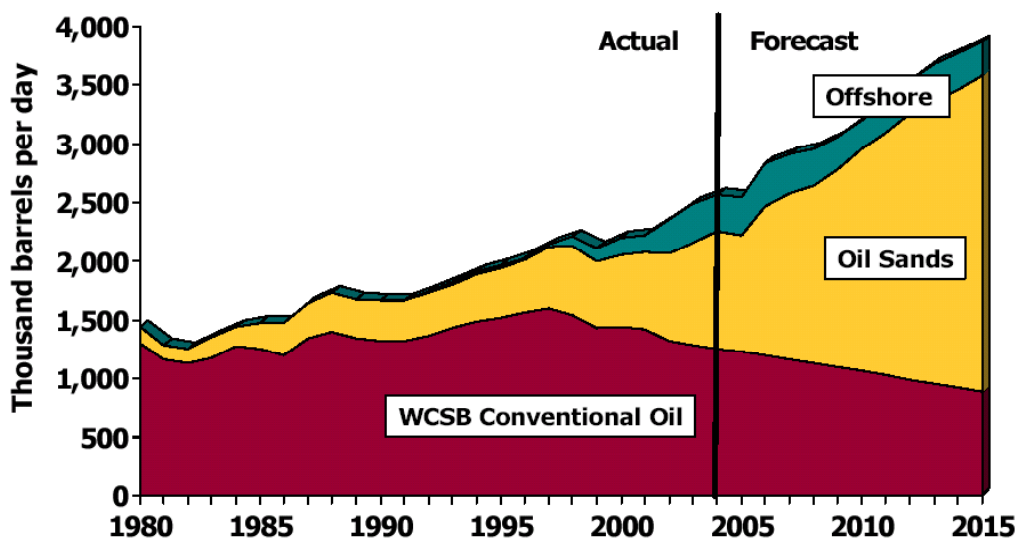
## SITUATION OVERVIEW

Alberta's Oil Sands reserves place Canada second behind only Saudi Arabia in the world ranking of all crude oil reserves. Until recently, industry-wide assumptions regarding minimum long-term oil prices, and the significant capital investments required to develop oil sands reserves, have resulted in limited levels of production.

The recent change in pricing assumptions has driven oil sands producers to take aggressive actions to rapidly increase production levels. Today, Oil Sands account for nearly half of Canada's total oil production. Strong capital spending is forecasted for the next decade, which will drive Oil Sands production to 75 percent of Canadian output by 2015 (see Figure 1).

**FIGURE 1**

Canadian Oil Production



Source: CAPP, 2005

Speed to production is a common focus across producers at all stages of maturity including construction, early production, and mature operations. Producers with sites under development are focused on getting construction camps built and rapidly installing major equipment. The complex transition to production, including the installation and testing of advanced monitoring and control systems, is being pushed as fast as possible while ensuring safety. Even facilities already in production are being pushed to expand output immediately and improve yields.

Producers are using two primary extraction techniques. Both face extreme logistical challenges. Extraction of bitumen via mining requires establishing vast surface facilities and large equipment fleets operating under harsh environmental conditions in remote areas. In-situ recovery often occurs in even more remote areas than mining and also requires infrastructure to transport and efficiently use large quantities of water and natural gas. Both of the primary extraction techniques used often have low marginal returns so improvements in efficiency are critical to improved profitability and the ability to attract more capital on favourable terms. As bitumen is being transported, upgraded and refined operational efficiencies are also a critical concern.

Labour and infrastructure shortages, such as inadequate roads, especially around the hub of Fort McMurray, are compounding producers' challenges to rapidly increase production. Companies are trying to attract, train, and retain both their own and partners' workers.

## RESEARCH FINDINGS AND STRATEGIES

Business executives are working towards a set of goals, but as Figure 2 indicates to be most successful, they must also implement a defined set of strategies

**FIGURE 2**

Oil Sands Phases: Major Goals and Key Strategies

Phase	Construction	Early Production	Mature Operations
Major Goals	Building the Camp	Increasing Speed to Profit	Driving Capacity and Production
Key Strategies	Increasing Worker Productivity and Retention	Maximizing Asset and Yield Management	Improving Stakeholder Relations
← Complying with Health, Safety, and Environmental Regulations →			

Source: Energy Insights, 2006

- **Increasing Worker Productivity & Retention.** Industry executives cite the lack of qualified workers as their most acute shortage. There is little near-term improvement in labour supply anticipated. As a result, companies are concentrating on improving the capabilities and productivity of the workers available to them. They are also focused on minimizing losses of workers from any cause. At the earliest stages of new construction projects this means improving the quality of life for workers in camps including insuring that they have access to robust communication capabilities including even entertainment considerations. At the new construction phase and latter stages, improving workers skills so that they can perform more tasks, work faster, and have better careers creates a win-win situation with a measurable impact on retention. These same offerings can be provided to partners allowing them to perform more work and be predisposed to continuing relationships with a given producer despite their many other market opportunities.
- **Maximizing Asset & Yield Management.** Companies are striving to improve operating efficiency across the entire value chain from gas & water supply and mining & in-situ extraction, to upgrading & refining and transportation to the market. With oil sands production, dependent on a few pieces of critical equipment, the loss or inefficient utilization of this equipment can turn what may be thin profit margins into substantial losses. Further limited permitting and work order automation, lengthy response time to needs and procurement, and inefficient logistic processes, can lead to reactive project management and lower operating efficiencies. The use of advanced work and asset management capabilities is being deployed more frequently to ensure maximum availability and operational efficiency while minimizing the need for workers' time on these tasks. Monitoring of critical equipment is a means of providing early notification of potential outages, allowing the scheduling of maintenance at optimal times, and providing input for increased production efficiency.
- **Improving Stakeholder Relations.** Positive stakeholder relations are key to increased levels of production to achieve optimal efficiency within mature operations. Stakeholder concurrence with expansion plans is a vital consideration. Producers know that if they have a bad reputation then their expansion plans can be blocked or delayed. Effectively communicating with stakeholders as early and completely as possible is seen as a key task in facilitating these plans. Common actions intended to improve stakeholder relations include providing more opportunities for input, more effectively using information provided to producers, and timely communications.

- **Complying with Health, Safety, and Environmental Regulations.** HSE issues impact companies across each phase. Given labour shortages, anything that can be done to prevent lost time incidents has immediate business benefits beyond the primary consideration of the workers' well being. Given the increased production plans that most producers have, they can not afford the lost time associated with increased scrutiny of their activities by regulators or any stakeholder reluctance to fund or concur with expansion.

## **RECOMMENDATIONS**

Prevailing energy prices, growing demand, and availability of hydrocarbon resources within the oil sands clearly point to the long term sustainability of the Fort McMurray region. Oil Sands producers can reach these increased levels of production at efficient yield levels by incorporating a number of creative strategies to deal with their challenges. Based on the research findings, Energy Insights recommends investments for each phase of maturity as follows:

- **Construction** – during this phase IT and communications deployment has historically been poorly planned and haphazard. Producers are too busy working on physical plant and construction issues to focus on IT and communications. This has resulted in duplication of effort and lack of integration among systems. Inevitably, this situation has not helped producers address the shortages of labour, infrastructure and equipment. To adequately address the business challenges, IT and communications investment should focus on enabling:
  - Supply chain management (planning, logistics, inventory)
  - Project management
  - Human capital management for staff and contractors (recruiting, education, safety)
  - Worker quality of life (personal communications, entertainment)
- **Early production** – during this phase, where the challenge is to ramp up production and achieve profitability, producers have put an increased emphasis on IT and communications. Support begins to shift from local operations to headquarters, production monitoring and control systems are added, and disaster recover/business continuity and application integration become important. IT and communications solutions should build on investments from the previous phase and extend capabilities to:

- Work and asset management
- Financial management
- Real-time monitoring and control (SCADA, field data collection)
- Enterprise risk management (regulatory compliance, operations management)
- **Mature operations** – during this phase the primary business challenge is to maintain profitability and grow market share through process improvement. Support for IT and communications is centralized to headquarters, sophisticated monitoring, tracking and control systems are deployed to support a rapid measure-model-decide-execute cycle, systems move to a higher degree of integration, and a higher degree of automation is employed – replacing labor with technology. IT and communications investments should add capabilities to support:
  - Business intelligence
  - Integration of field systems with production accounting and ERP
  - "Digital Oilfield" initiatives
  - Sharing of IT and communications services
  - Partner relationship management

## **NEXT STEPS**

To become part of this research study and benchmark your organization against others in the study group please contact TELUS Business Solutions at [www.telus.com/energysector](http://www.telus.com/energysector).

## **METHODOLOGY**

TELUS Business Solutions sponsored this research study. Nine executive interviews, conducted in November and December 2005, were with senior business executives who work at Canadian oil sands producers. Respondents were screened and qualified based on decision-making authority and the scope of activity within their organizations. Filigree Consulting, on behalf of Energy Insights, conducted the telephone interviews.

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