Regulatory Action in Alberta’s Oil Sands
Energy Resources Conservation Board - Washington, D.C.

May 2011

Energy Supply

Canada is the largest supplier of crude oil to the U.S.
- Oil sands production a growing contribution to North American energy supply and security
Alberta covers 661,190 km² (255,285 miles²), an area comparable to Texas.

### Alberta’s Location

- **Ottawa**: 2847 km (1769 miles)
- **Vancouver**: 817 km (507 miles)
- **New York City**: 3270 km (2032 miles)
- **Mexico City**: 3973 km (2469 miles)
- **Anchorage**: 2277 km (1415 miles)
- **Houston**: 3018 km (1878 miles)

### World oil reserves

(billions of barrels - established)

<table>
<thead>
<tr>
<th>Country</th>
<th>Reserve (billions of barrels)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saudi Arabia</td>
<td>260</td>
</tr>
<tr>
<td>Venezuela</td>
<td>211</td>
</tr>
<tr>
<td>Alberta / Canada</td>
<td>175 (Alberta)</td>
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<tr>
<td>Iran</td>
<td>137</td>
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<tr>
<td>Iraq</td>
<td>115</td>
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<tr>
<td>Kuwait</td>
<td>92</td>
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<tr>
<td>Abu Dhabi</td>
<td>80</td>
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<tr>
<td>Russia</td>
<td>60</td>
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<td>Libya</td>
<td>46</td>
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<td>Nigeria</td>
<td>37</td>
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<td>Kazakhstan</td>
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<td>Qatar</td>
<td>28</td>
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<tr>
<td>China</td>
<td>20</td>
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<td>USA</td>
<td>19</td>
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<tr>
<td>Brazil</td>
<td>13</td>
</tr>
<tr>
<td>Mexico</td>
<td>10</td>
</tr>
</tbody>
</table>

Only 13% of the world’s known oil reserves are accessible to international oil companies; not state controlled. One-half of those reserves are in Alberta’s oil sands.

Source: Oil & Gas Journal, January 2011
Where are the Oil Sands?

Alberta’s boreal forest (301,000 km²)

Oil sands deposit (143,000 km²)
Where are the Oil Sands?

- Alberta's boreal forest (301,000 km²)
- Oil sands deposit (143,000 km²)
- Oil sands surface mineable area (4000 km²)

Where are the Oil Sands?

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- Oil sands deposit (143,000 km²)
- Oil sands surface mineable area (4000 km²)
- Oil sands surface mineable area disturbed to date (663 km²)
The Alberta Context

Albertans own the resource

Alberta Government
- Grants tenure
- Sets and collects royalties

Tenure is an opportunity, not a right

Alberta’s Values

Oil sands regulation is governed by legislation that captures the following values
The public interest balancing
- Environmental, including cumulative impacts
- Social
- Economic
Alberta Regulation Framework

Government sets policy

Legislation

ERCB administers Public policy

Other government departments

Regulations

Oil sands projects

Primary Regulatory Interfaces

ALBERTA ENERGY
Energy policy
Mineral rights
Royalty
Pre-drilling exploration

NATIONAL ENERGY BOARD
Gas export
Federally-regulated pipelines

ALBERTA HUMAN RESOURCES AND EMPLOYMENT
Occupational health and safety

CANADIAN ENVIRONMENTAL ASSESSMENT AGENCY (CEAA)

PUBLIC
Notice of applications
Information
Directly affected
Public hearings

ENERGY RESOURCES CONSERVATION BOARD
Facilities/scheme approvals
Information collection and dissemination
Compliance/inspections
Correlative rights

ALBERTA ENVIRONMENT
Environmental standards and approvals
Environmental impact assessment
Pollution control

ALBERTA SUSTAINABLE RESOURCE DEVELOPMENT/SURFACE RIGHTS BOARD
Surface access and rights-of-way on privately owned land
The ERCB’s mission is to ensure development is safe, fair, responsible and in the public interest
- 70+ years of regulatory heritage
- Independent decision maker
- Technical experts
- 9 Board Members and 900+ staff (about 100 focused on oil sands development)

Energy Regulated Facilities

Producing Oil & Gas Wells 176 166*
ERCB Regulated Pipelines 394 000 km
Gas Processing Plants 955
(633 sweet gas, 292 sour gas)
Oil Sands 61 in situ**, 8 surface mines
154 primary recovery projects
20 experimental projects
Upgraders 5 facilities
(240 360 m³ per day capacity)
Coal Mines 12 plants
(Annual production: 32.2 Mt)

* Producing wells: 9 700 bitumen, 35 484 conventional oil, 116 603 gas, 1 412 CSM and 250 shale.
** As of January 2011
Rigorous and Transparent Regulation: Application Process

No oil sands project may proceed without
- Meaningful consultation
- A project application, including an EIA and assessment of cumulative effects
- A complete review by expert ERCB staff
- On complex or contentious projects, a formal hearing
- A formal approval document
Rigorous and Transparent Regulation: Ongoing Surveillance

Ensure compliance with regulations
- Teams of inspectors, including professional engineering and environmental staff
- About 120 inspections of oil sands mines in 2010, typically lasting several days
- Conducted more than 10,000 inspections of in situ facilities since 2007

Take action when noncompliance found

Compliance Across Alberta

Compliance with major ERCB regulations was 98.6% in 2009

Full disclosure: monthly public compliance summary

Action against noncompliance
- Shut down 177 facilities in 2009: financial penalty plus immediately mitigates impact
- Operator must show that it won’t happen again: compliance plans are audited
- Global refer status
- Coordinate with other government departments

Government Action
- Prosecutions, fines, creative sentences
Mitigating Impacts of Industrial Activity

What regulation is about

Management of Tailings Ponds

Ponds have extensive groundwater monitoring and seepage capture systems
Directive 074: Tailings Performance Criteria and Requirements

- Convert fluid fine tailings to reclaimable landscapes
- Reduces amount of fluid tailings
- Minimize the size of ponds
- Progressive reclamation with timelines

Results

- Performance-based solutions
- Fostered investment in new technology
- Sharing of intellectual property among operators
- Operator plans cancelled to create new tailings ponds
Water Quantity

Water Management Framework sets strict limits
- 3% of the Athabasca River’s annual flow is allocated for use: less than 1% is used

Mining projects use up to 85% recycled water

In situ projects average 75% recycled produced water and 10% brackish (total up to 100% on some projects)

Water Quality

Monitoring, evaluating, and auditing data
- Understand baseline quality, then monitor for changes

Zero-discharge policy for process-effected waters

Always looking for improvements to monitoring
- Provincial panel and federal panel dedicated to first-class state-of-the-art monitoring system
Groundwater

- Groundwater mapping
- Regulations that safeguard groundwater
- Understand the specific project
  - How will it be operated
  - Ensure understanding of geology
  - Place constraints if necessary

Monitoring

Air

Alberta is protecting clean air, not reversing contamination

- Environmental Protection and Enhancement Act specifies ambient air quality guidelines
- Most heavily monitored air shed in the world
  - Network of continuous monitoring stations operated 24/7
  - Collaboration of communities, ENGOs, industry, government and Aboriginal stakeholders
  - Fully accessible and real time

Air quality rated good (highest rating) 98% of the time
Greenhouse Gas Context

Canada is responsible for 2% of the world’s GHG emissions
- Oil sands is responsible for 0.1% of global emissions

Alberta's oil sands account for less than 1/10 of 1% of GHG emissions

Action on Greenhouse Gases

Alberta is first jurisdiction in North America to regulate large industrial GHG emissions

- Legislative framework for Carbon Capture and Storage
- $2 billion in public funds for large-scale CCS projects
- Canada’s Federal Government working on solutions
Progressive Reclamation

Alberta is looking at all aspects of reclamation
- Required by law in Alberta
- Financial security program

Life expectancy of a mine can be 40+ years
- Must have progressive reclamation

Reclamation certification requires that the land be deemed as productive as before mined.
- Liability transfers back to the province
Reclamation

About 26 square miles of disturbed land is reclaimed or under active reclamation

More than 7.5 million tree seedlings planted in reclamation efforts

Almost half of Alberta’s coal mines have been reclaimed – the remainder are active

Status of All Disturbed Land in Oil Sands Mining
Cumulative Impacts

Science-based decisions
- Predict impacts and cumulative effects of a proposed activity
- Follow-up monitoring to validate predictions
- Actions could include:
  • Apply conditions to project approval
  • Create new ecological areas to compensate
  • Mandate additional technology during project operation

Draft Lower Athabasca Regional Plan
Manages cumulative effects
Conserves more than 7700 square miles of habitat for native species
Strict science-based environmental limits for air, land, disturbance and water
Triggers to signal where proactive efforts are needed to avoid reaching limits
Developed with input from stakeholders including public, local government, and First Nations
Regulatory Strength

Alberta’s regulatory regime is integrated and comprehensive

The framework is flexible, responsive and tackles issues

Strong results based on expert application of science

Commitment to improvement

Albertans care about the legacy for future generations

Questions?

dan.mcfadyen@ercb.ca
terry.abel@ercb.ca

www.ercb.ca