



Alberta's Oil Sands  
*Opportunity. Balance.*



*“Like others around the globe, we’re working to find the right balance between development and conservation. Our climate change plan ensures environmental protection while allowing for continued economic growth. It is practical and achievable. It encourages innovation, and sets realistic goals for industry.”*

Alberta Premier Ed Stelmach

## INTRODUCTION

Different people have different energy needs depending on where they live. We heat and cool our homes; use transportation to move people and goods from one place to another; and consume products that are grown or manufactured.

But two realities face the world today: populations continue to grow and energy needs are climbing in almost every country on the planet.

So where does the world's energy come from?

Fossil fuels continue to be the dominant form of energy—accounting for 86 per cent of energy consumption around the world. They are relatively easy and inexpensive to produce. But fossil fuels take energy to extract, process and deliver to the world's populations. In addition, conventional/lighter oils are becoming harder and more expensive to find and produce.

With increasing environmental pressures including climate change, we are looking for ways to reduce our impact on the environment. While technology continues to develop and more alternate energy sources are becoming available, that isn't enough to meet world demands for energy.

Energy consumption and demand continue to rise, while society is seeking cleaner and greener production. This dynamic is one of the biggest challenges of the 21<sup>st</sup> century. It's shaping the context that industry and governments are operating in. So how does everyone move forward from here?

There is ample debate on what the right balance is between energy development and environmental stewardship. This type of crucial, global debate deserves the facts.

This booklet provides a snapshot of actions taken in Alberta to ensure the oil sands are developed in a responsible way. It provides the Alberta government's vision for environmental protection during oil sands development, as well as Alberta's vision for developing one of the world's largest deposits of oil.

## OIL SANDS PRIMER

Oil sands are **naturally occurring** viscous mixtures of sand or clay, water and an extremely heavy substance called bitumen. Bitumen will not flow unless it's heated or diluted. At room temperature, it acts much like cold molasses.

In the past, bitumen was used to waterproof boats and even as a coating for buildings. The Greek historian Herodotus said hot bitumen was used as mortar in the walls of Babylon. Bitumen was also used in early photographic technology.

Alberta contains the largest concentration of oil sands in the world.

Alberta's three major areas contain approximately 1.7 trillion barrels of bitumen in place; **proven measures indicate there are 173 billion barrels of recoverable oil in the oil sands.**

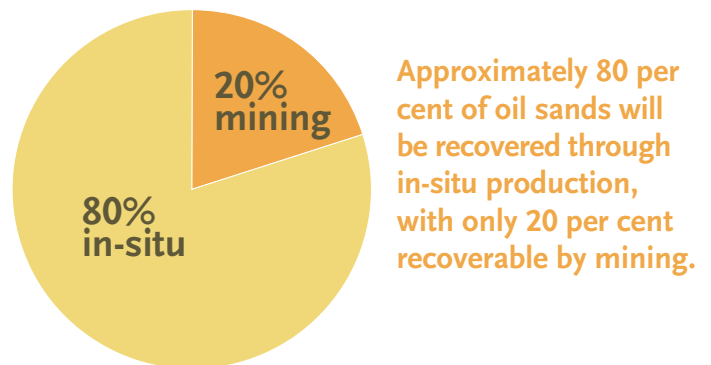
Albertans own the oil sands resource, while industry purchases the mineral rights to extract the bitumen. Industry pays royalties back to the owners through the Alberta government. In 2006-07, the province collected \$2.4 billion in royalties from oil sands production.

While bitumen exists naturally in Alberta, it must be recovered and processed to separate it from the sands and produce consumer products like gasoline.

Bitumen is recovered in two ways. For oil sands near the surface, it can be mined and moved by trucks to a cleaning facility where the sand is mixed with warm water to separate the bitumen.

For oil sands further beneath the surface, it is more practical to extract by in-situ (Latin for 'in-place') methods. In-situ separates the bitumen from the sand underground by using steam to heat it to a point that allows it to be pumped by a well to the surface. In-situ processes have a significantly smaller footprint on the landscape.

Alberta's boreal forest covers an area of 381,000 square kilometers (147,100 square miles). The entire mineable area in the oil sands covers 3,500 square kilometers (1,350 square miles), which is less than 1 per cent of boreal forest area.



### ► TAR SANDS VS. OIL SANDS

The use of the word tar to describe bitumen deposits is inaccurate. Tar is a man-made substance produced by the destructive distillation of organic material. Bitumen may look like tar, but it is naturally occurring. Oil sands is the correct term for the bitumen deposits of northern Alberta.

## STEPS TO DEVELOPMENT IN THE OIL SANDS

1. Private company purchases mineral rights for a specific area.
2. The company makes an application for development to the Energy Resources Conservation Board, which regulates safe, responsible and efficient development of Alberta's energy resources.
3. Public hearing may be held.
4. Environmental impact assessment, water use request and socio-economic impact study submitted to Alberta government.
5. A decision on the project application is made.
6. If approved, development proceeds based on terms set out in the project approval.
7. Annual reporting and 10-year renewal required.

In 2006, bitumen production averaged 1.25 million barrels a day through 81 producing oil sands projects in Alberta.

Due to the nature of developing the oil sands, industry faces significant challenges to reduce the amount of greenhouse gas (GHG) emissions, water and natural gas required to create a barrel of refined oil. Using today's production methods, it does take more effort to produce heavy oils, including oil sands oil, than conventional oil.

But new technologies continue to reduce the footprint of oil sands development. For example, carbon dioxide emissions have gone down by 45 per cent per barrel of oil since 1990, and up to 90 per cent of water can be recycled depending on the maturity of the facility and type of extraction. The gap is closing.



# ALBERTA'S VISION FOR RESPONSIBLE DEVELOPMENT OF THE OIL SANDS

Alberta is committed to being a good steward of our natural resources. We are working every step of the way to ensure oil sands development takes place in a manner that addresses the environmental, social and economic values of all Albertans.

## ENVIRONMENTAL PROTECTION

Alberta is proving that environmental protection and economic development can happen at the same time.

The province has shown leadership through legislation and policies involving land reclamation, water controls, air quality, and human and ecosystem health.

In the oil sands, current production methods mean that more energy is needed to produce a barrel of oil than conventional oil. But the gap is closing. Technology continues to advance, reducing the energy and environmental impact of oil sands recovery. **For example, per barrel of oil, carbon dioxide emissions have been reduced by 45 per cent since 1990.**

### *Legislation*

The government works with affected stakeholders—including industry and environmental organizations—to develop environmental laws that work.

Stringent legislation and on-the-ground measures are already in place to protect the air, land and water during oil sands development. And government is continuously making improvements to balance the protection of the environment and the development of this valuable resource.

**In 2007, Alberta became the first in North America to legislate mandatory greenhouse gas reductions for large industrial facilities.**

The legislation applies to all industrial facilities that emit 100,000 tonnes or more of GHG a year, which accounts for 70 per cent of the province's emissions. These facilities are required to reduce their emissions by 12 per cent, as of the end of 2007.

Facilities that fail to meet this target have the option of buying Alberta-based carbon offsets, or paying into the Climate Change and Emissions Management Fund. The fund takes \$15 for every tonne over reduction targets and directs it to strategic projects or technology aimed at reducing GHG emissions in the province.

### *Protecting the land*

**Under Alberta's strict reclamation standards, companies must remediate and reclaim Alberta's land so it can be productive again.** The standard requires the land be able to support a range of activities similar to its previous use before oil sands development.

There are 420 square kilometers (162 square miles) of land that has been disturbed by oil sands activity—which is just over half of the area of the City of Edmonton, or one third the area of the City of Los Angeles.

As of March 2008, approximately 65 square kilometers (25 square miles) are undergoing active reclamation. Industry must submit reclamation plans for approval to the Alberta government, which then issues a final certificate once work is sufficiently completed.

By law, industry must post financial security equivalent to the cost of reclamation before beginning oil sands activity. This money is kept in the Environmental Protection Security Fund and returned to industry when reclamation certificates are issued. As of 2007, the fund held \$468 million.

No reclamation certificates have been issued for oil sands projects yet as it takes time to adequately reclaim land. In some cases, it can take up to 50 years. But work is progressing to return the disturbed land to a natural state after development, and it will be done right. **For example, major oil sands companies have planted more than 7.5 million tree seedlings towards their reclamation efforts.**

While oil sands operations are required to meet our high standards, the Alberta government will put in place tighter timelines for reclamation for the growing number of in-situ operations.

### *Protecting the water*

#### **Limiting water use**

Strict limits are placed on industry water use through Alberta's Water Management Framework for the Lower Athabasca River. This leading-edge framework puts a weekly cap on how much water oil sands companies can remove. The cap is tied to the fluctuating flow of the river.

**All existing and approved oil sands projects will withdraw less than three per cent of the average annual flow of the Athabasca River.**

During periods of low river flow, water consumption is limited to the equivalent of 1.3 per cent of annual flow. At times, this can mean industrial users will be restricted to less than half of their normal requirement given current approved development. This framework is one of the most protective policies to apply to year-round water withdrawals in a northern climate.

Limiting withdrawals encourages each oil sands operation to conserve water and ensures healthy aquatic ecosystems – a key element of *Alberta's Water for Life* strategy – the province's plan for the wise management of water.

Industry is also doing its part. It is constantly looking for ways to reduce the amount of fresh water used in oil sands operations. **Up to 90 per cent of the water used is recycled, depending on the maturity of the facility and type of extraction.** Certain in-situ extractions in the Cold Lake deposit are using brackish water from deep underground salt water aquifers instead of drawing from fresh surface water.

#### **► INNOVATIVE ENERGY TECHNOLOGIES PROGRAM**

This program offers royalty adjustments of up to \$10 million per pilot project that demonstrates the use of new or innovative technologies to increase environmentally sound recovery of reserves and responsible development.

Since 2005, \$148 million has been invested through this program, which includes projects such as Petro-Canada Mackay River's innovative steam and gas push process.



# ALBERTA'S VISION FOR RESPONSIBLE DEVELOPMENT OF THE OIL SANDS

## Ensuring water quality

The Alberta government has been monitoring water quality in the oil sands region since the early 1970s. Priority number one is to ensure water quality is not compromised for communities downstream.

**Industry is prohibited from discharging untreated process water from oil sands projects into the Athabasca River at the penalty of prosecution.**

The Regional Aquatics Monitoring Program (RAMP), which began in the early 1990s, collects and assesses thousands of water samples from across the region each year.

RAMP is a community-based program that involves local communities, government and industry. Members provide direction on what input is collected for studies and how data is interpreted. They also compare actual data with predictions and commitments made in environmental impact assessments compiled by industry.

## ► TAILINGS POND SAFETY

Tailings are a mixture of clay, sand, water and fine silts formed during the oil sands extraction process. They are contained in ponds or settling basins, which are effective ways of managing them while they settle.

Any proposal to construct a new tailings pond is thoroughly examined by technical experts from a host of regulatory bodies. Every effort is made to ensure that the design and proposed location of a pond is suitable from an environmental, resource conservation and economic point of view.

All tailings ponds are constructed with groundwater monitoring and seepage capture facilities, and are closely monitored to ensure any seepage is minimized so there are no impacts to surface water. As an added level of protection, interceptor ditches are constructed around tailings ponds to prevent any seepage from entering groundwater systems or waterways.

**New oil sands plants will generate fewer tailings. Research on ways to treat tailings more efficiently continues, with the goal of helping tailings settle quicker or even eliminate the need for tailings ponds altogether.**

## ► AIR QUALITY

The Wood Buffalo Environmental Association monitors the air in the oil sands region, 24 hours a day, 365 days a year for air quality pollutants including carbon monoxide, nitrogen dioxide, ozone, fine particulate matter, sulphur dioxide and hydrogen sulphide.

**In 2007, air quality near Fort McMurray was rated good or better 98 per cent of the time.** Air quality in the region is consistently better than in major Canadian cities like Toronto, Montreal and Vancouver.





## ▶ OIL SANDS ENVIRONMENTAL MANAGEMENT DIVISION

To ensure the oil sands are developed in a responsible way, the Alberta government reinforced its commitment with a separate division totally dedicated to oil sands strategic management within Alberta Environment.

Introduced in 2007, this division is planning ahead for expected oil sands development by implementing a number of strategies that help manage Alberta's oil sands in an environmentally responsible way.

This division recently ran a global recruitment campaign. The division now includes 130 minds working together to develop innovative policies for managing environmental impacts in one of the world's biggest industrial developments.

### *Protecting people and ecosystems*

The health of people and the ecosystem are priorities of the Alberta government and every concern is treated with great importance. The province relies heavily on scientific testing and environmental monitoring to ensure the safety of everyone and everything living near oil sands development.

Due to the naturally occurring bitumen and other materials in the oil sands, **sediments from the banks of the Athabasca River are caught in the current and cause natural contaminants in the water.**

Stringent testing has consistently shown there has been no increase in concentrations of contaminants as oil sands development has progressed. In fact, contaminant levels in other rivers in the area with absolutely no industrial oil sands activity have been found to be higher than those adjacent to oil sands projects. The contaminant sources in the area are natural.

The Alberta and Canadian governments are currently developing a research program to more fully examine the impacts of these natural oil sands sediments on the ecology of Lake Athabasca and its delta.

Mercury concentrations have shown a maximum of eight parts per trillion prior to entering Lake Athabasca. The Alberta guideline, which is the most protective of any in North America, is 13 parts per trillion. To put it in perspective, one part per trillion is equivalent to one drop of detergent in enough water to fill a string of railroad tank cars 16 kilometers (10 miles) long.

For arsenic, all of the samples collected since 1990 have been below provincial water guidelines. The province has been actively sampling traditional foods in the area (e.g. wild meat) and found that arsenic concentrations in these foods were consistent with concentrations found elsewhere in Alberta where there is no development. Fish deformities in the region are consistent with historic frequencies and have not increased through time.

**Extensive testing has shown no signs of elevated risks for people living downstream from oil sands projects.**



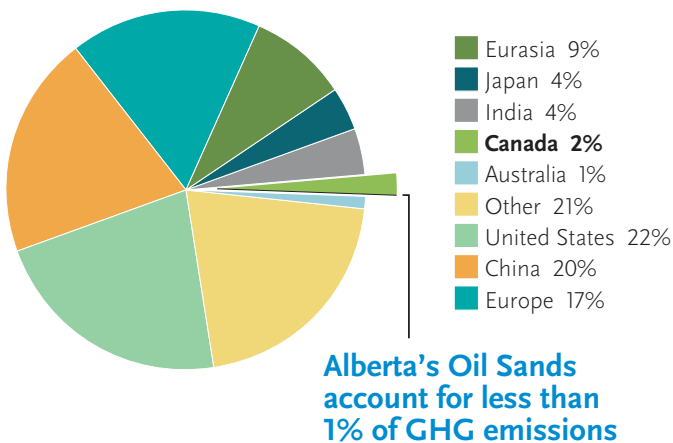
On a global scale, the oil sands account for less than 1 per cent of greenhouse gas emissions.

# ALBERTA'S VISION FOR RESPONSIBLE DEVELOPMENT OF THE OIL SANDS

## CLIMATE CHANGE AND THE OIL SANDS

Out of the 29,000 million tonnes of GHG released into the world's atmosphere each year, Canada is responsible for two per cent of these emissions. **Within Canada, the oil sands account for only four per cent of GHG emissions.**

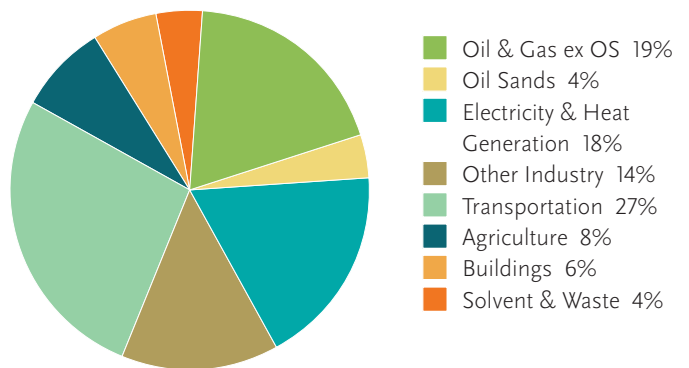
### GLOBAL ENERGY-RELATED EMISSIONS



Source: Canadian Association of Petroleum Producers

Oil sands emissions are eight times less than the Canadian emissions from transportation (27 per cent), four and half times less than electricity and heat generation (16 per cent) and less than one half the emissions from agriculture (8 per cent).

### CANADIAN EMISSIONS BY SECTOR



Source: Canadian Association of Petroleum Producers

But this reality doesn't mean improvements to further reduce the GHG emissions from oil sands development can't and won't be made.

# ALBERTA'S VISION FOR RESPONSIBLE DEVELOPMENT OF THE OIL SANDS

## CLIMATE CHANGE PLAN

Like others around the globe, Alberta is working to find the right balance between development and conservation. Successful climate change plans ensure environmental protection while allowing for continued economic growth. They encourage innovation and set realistic goals for industry.

In 2008, the Alberta government laid out a new climate change plan for the province. It is a realistic and achievable plan that recognizes the importance of protecting Alberta's environment and continued economic growth.

The plan will reduce greenhouse gas emissions 50 per cent from expected levels by 2050 and will lower emissions to an equivalent of 14 per cent below 2005 levels. **By 2050, this plan will reduce projected emissions by 200 million tonnes each year, which is the equivalent of taking 42 million cars off the road.**

Alberta is in a unique situation—it is experiencing unprecedented growth and is a major North American energy supplier. The plan recognizes that GHG emissions

will rise in the short term until 2020, while the economy is under tremendous growth. But as new technology begins to be implemented, emissions will drop.

Carbon capture and storage (CCS), energy conservation and efficiency, and greening energy production are keys to the reduction.

**CCS will deliver the bulk of Alberta's reduction commitment — the largest identified and published by any province in Canada.**

### *Carbon Capture and Storage*

Carbon capture and storage (CCS) is a practical way for Alberta to address climate change.

CCS is the process of capturing carbon dioxide before it is emitted into the air and injecting it deep into underground chambers. Many groups agree CCS holds great promise, especially for Alberta. Endorsements have come from environmental groups, the energy industry, a national advisory council, and the United Nations panel that won a Nobel Prize for its report on climate change.

*“Implement carbon capture and storage (CCS) immediately. We have point emission sources and disposal reservoirs that are perfectly aligned. Don't build another coal power facility or oil sands facility that is not ready for carbon capture. Others should be transitioned to CCS.”*

Marlo Reynolds, Executive Director, Pembina Institute

Alberta's energy industry has been using the technology for more than 20 years as a method of producing oil from depleted fields. That means Alberta has the current technology and experience needed for wider-scale implementation. We also know CCS has the potential to significantly reduce Alberta's industrial GHGs—particularly in the oil sands.

Research shows the province's geology is well-suited for storage. Three Alberta scientists who contributed to the United Nations report agree our geological formations are stable and storage sites are protected by impermeable rock that can trap carbon dioxide underground.

Moving forward, the Alberta government has set up a council to ensure CCS is done correctly as we apply it on a larger scale. We expect this technology will produce the greatest emission reductions in the oil sands.

**With CCS, emissions associated with oil sands production will fall below that of conventional oil.**

► **CALGARY HERALD –  
EDITORIAL JANUARY 26, 2008**

<The climate change plan> contains two clear signals essential for industrial stability. First, although greenhouse gas emissions will continue to rise for now, it commits the provincial government to cutting by 50 per cent the emissions that would be generated if projected growth was unaccompanied by any kind of plan to limit them. Industry has its environmental goal.

Second, the government has chosen real CO<sub>2</sub> reductions, based on proven carbon capture and storage technology, rather than financial penalties for non-compliance. Good. If rising CO<sub>2</sub> levels are indeed a planetary threat, buying and selling of credits in a cap-and-trade scheme... is no remedy. Better to emit one less tonne of CO<sub>2</sub> than just move money around.

*“I see the oil sands continuing to grow in a way consistent with the government's desire to see a reduction of GHGs. We think both are achievable.”*

Canadian Prime Minister Stephen Harper



## ALBERTA'S VISION FOR DEVELOPING THE OIL SANDS

For almost 35 years, the Alberta government has taken a proactive approach to developing the oil sands.

Through strategic investment and appropriate policies, the province has helped the oil sands generate tremendous economic benefits for the people of Alberta and Canada.

Planning began in 1974, when the Alberta government formed the Alberta Oil Sands Technology and Research Authority to proactively develop oil sands technologies that would allow bitumen to be recovered at relatively low costs.

Almost \$1 billion in seed money was distributed from 1976 to 1999, helping generate \$140 billion in oil sands investment. Another success has been the creation of new technology that reduces the environmental impact of oil sands development.

Fast forward to today. In 2007, the Alberta government embraced a vision for the future of oil sands development. This vision, based on consultations with Albertans and recommended in the Multi-Stakeholder Committee and Aboriginal Consultation Final Reports, leads to a future that:

- Honours the rights of First Nations and Métis
- Provides a high quality of life
- Ensures a healthy environment
- Maximizes value-added in Alberta
- Builds healthy communities
- Sees Alberta benefit from the oil economy and lead in the post-oil economy
- Sees Alberta as a world leader in education, technology and a skilled workforce
- Provides high quality infrastructure and services for all Albertans
- Demonstrates leadership through world class governance

### ► ALBERTA'S NEW ROYALTY FRAMEWORK

In October 2007, the Alberta government announced changes to the province's oil and gas royalty structure to ensure Albertans are receiving an increased return from the development of non-renewable energy sources.

The new framework will also allow the province to consider taking raw bitumen in lieu of cash royalties. Bitumen could then be used strategically to supply upgraders and refineries in Alberta.



### **Cumulative Effects Management**

The government is taking the lead by developing a management plan for the northeast region of Alberta. This plan will look beyond oil sands development on a project-by-project basis by addressing the cumulative effects of development.

This approach enables responsible resource development that incorporates creative and innovative solutions to secure economic prosperity, while maintaining the province's commitment to environmental protection and stewardship.

This cumulative effects approach has already been implemented to manage the potential environmental pressures of upgrading bitumen in Alberta's Industrial Heartland near Edmonton.

This new cumulative effects management framework sets comprehensive, science-based targets, outcomes and actions to protect the air, land and water for the Industrial Heartland area.

### **Oil Sands Sustainable Development Secretariat**

To assist with the management plan for the northeast region, the Oil Sands Sustainable Development Secretariat was created in 2007.

The Secretariat collaborates with government departments, industry, communities and stakeholders to address the environmental, social and economic impacts of oil sands development.

It will present a strategic plan, based on input from Albertans, which will form a new provincial approach to proactively managing and optimizing development in the oil sands region.

**Between 2007 and 2008, the Alberta government committed over \$815 million to address the unique infrastructure, housing, health care and education needs related to growth pressures in Fort McMurray.**

### **► 10-YEAR LABOUR FORCE STRATEGY**

Created in 2006, *Building and Educating Tomorrow's Workforce* is the Alberta government's 10-year labour force strategy to meet skill and labour shortages and ensure the province remains globally competitive.

Its priority actions and strategies were created after extensive consultations with business and industry, professional and labour organizations, education and training providers and Aboriginal groups. The strategy will put the right people with the right training in the right jobs, especially in the oil sands industry and in northeast Alberta.



### **► ALBERTA ENERGY RESEARCH INSTITUTE (AERI)**

Formerly the Alberta Oil Sands Technology and Research Authority, AERI works with industry and government to promote innovation and technology, which will help Alberta's energy sector to evolve. AERI provides strategic direction to position Alberta for future energy development, and invests in research and technology to enhance the sustainable development of the province's abundant energy resources.

# Oil Sands Timeline

Hundreds of millions of years ago to present – remains of dead plants and animals fossilize; exposure to heat and pressure form petroleum and other fossil fuels.

**Early 1800s** – Commercial development of petroleum began, largely as a replacement for oils from animal sources used in oil lamps.

**1923** – First oil sands extraction plant built near Fort McMurray.

**1884** – Geological Survey of Canada remarks: “banks of the Athabasca River would furnish an inexhaustible supply of fuel... they have found to contain 12-15% bitumen”.

**1927** – International Bitumen Company formed, operates plant at Bitumount.

**1967** – The Great Canadian Oil Sands Project (now Suncor) opens. The \$250 million project was the largest single private investment in Canadian history at the time. At capacity, it produced 45,000 barrels a day.

**1936** – Abasand Oils Ltd. opens separation plant on the Horse River; by 1941 it was producing 200 barrels a day from May to September.

**1930** – 300 barrels of bitumen is extracted during the summer.

**1971** – Alberta government forms Canada’s first department of environment.

**1974** – Alberta Oil Sands Technology and Research Authority, an Alberta crown corporation, is established to promote the development and use of new technology for oil sands and heavy-oil production. Almost \$1 billion in seed money was distributed between 1976 and 1999; helping to generate \$140 billion in oil sands investment.

**1987** – Regional Air Quality Coordinating Committee formed (becomes the Wood Buffalo Environmental Association in 1997) to coordinate a program to manage air quality in the region.

**1970s** – Alberta Environment begins monitoring water quality in the oil sands region.

**1978** – Syncrude consortium plant opens.

**1985** – Imperial Oil begins commercial operations at its Cold Lake plant; the first to use in-situ recovery methods.

**1993** – The National Task Force on Oil Sands Strategies was formed to establish a vision for oil sands development in Alberta.

**1999** – Alberta government creates Climate Change Central; a public-private partnership to help cut CO<sub>2</sub> emissions.

1880 1890 1900 1910 1920 1930 1940 1950 1960 1970 1980 1990



**2006** – Oil sands consultations begin throughout Alberta. This series of information meetings were held to give Albertans an opportunity to add their voice into how the province's oil sands should be developed.

**2006** – A water management framework for the Lower Athabasca River is implemented, putting a weekly cap limiting how much water oil sands companies can remove.

**2007** – Alberta becomes the first in North America to legislate mandatory GHG reductions for large industrial facilities, including in the oil sands; provides first regulated economy-wide carbon offset market.

**2000** – AOSTRA becomes the Alberta Energy Research Institute, with an expanded role to include other energy-related research such as wind, solar, fuel cells, clean coal and biomass.

**2000** – Cumulative Environmental Management Association is created in Fort McMurray. It brings together government, industry, environmental groups, Aboriginal peoples and others with an interest in protecting the environment in the oil sands region.

**2004** – Alberta becomes first jurisdiction in Canada to require large industry, including major oil sand emitters, to report GHG emissions.

**2004** – Oil sands production passes the million barrel per day mark.

**2007** – Alberta adapts a broad, new approach to address cumulative effects on the environment by development projects. A series of comprehensive, science-based targets, outcomes and actions will be set to protect the air, land and water in a region.

2000

2001

2002

2003

2004

2005

2006

2007

2008

**2002** – Alberta becomes first jurisdiction in Canada to create a comprehensive climate change plan.

**2003** – A provincial climate change management fund is created to help sectors reduce emissions and invest in Alberta energy conservation, energy efficiency and technology.

**2007** – Alberta government creates the Oil Sands Sustainable Development Secretariat and Oil Sands Environmental Management Division to address the environmental, social and economic impacts of oil sands development.

**2007** – \$396 million is provided by the Alberta government to alleviate pressures of rapid growth and enhancing the quality of life in Fort McMurray.

**2007** – Policies created to limit burning of alternate fuels in steam generation to facilities that are carbon capture ready; and to limit oxides of nitrogen emissions for boilers, heaters and turbines.

**2007** – Alberta government changes the province's oil and gas royalty structure to ensure Albertans are receiving an increased return from development of non-renewable energy sources.

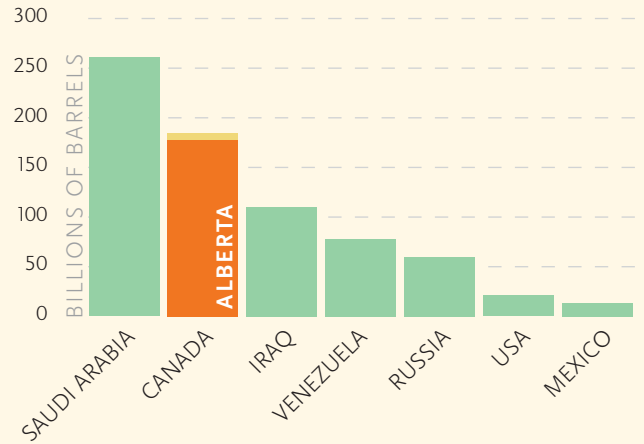
**2008** – Alberta announces new climate change plan, which will reduce GHG emissions by 50% (or 200 million tonnes) by 2050 compared to business as usual projections.

**2008** – A further \$420 million in funding from the Alberta government is announced for projects in Fort McMurray to improve traffic flow, expand health care and child care, school buildings and other essential community infrastructure.

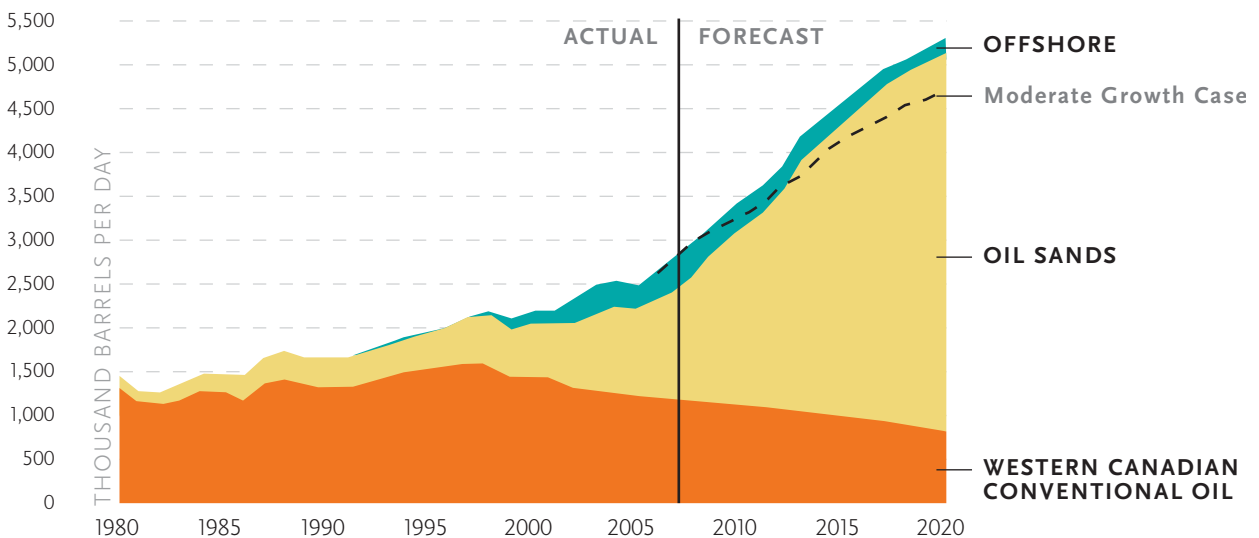
## CANADIAN ENERGY FACTS

- Energy producer – 5<sup>th</sup> in the world
- Crude oil producer – 7<sup>th</sup> in the world
- Natural gas producer – 3<sup>rd</sup> in the world
- Supplier of energy to the USA – largest in the world
- **Proven oil reserves of 179 billion barrels (173 billion in oil sands), second to only Saudi Arabia in the world.**
- In 2006, Alberta's oil sands were the source of 62 per cent of the province's total crude oil and equivalent production and 47 per cent of all crude oil and equivalent produced in Canada.

PROVEN WORLD RESERVES OF OIL



## CANADIAN OIL PRODUCTION



Source: Canadian Association of Petroleum Producers

## ECONOMIC OPPORTUNITY

The oil sands offer an incredible opportunity to secure the economic future of Alberta and the entire country. This potential is already being realized. Alberta is a powerhouse in an already strong Canadian economy.

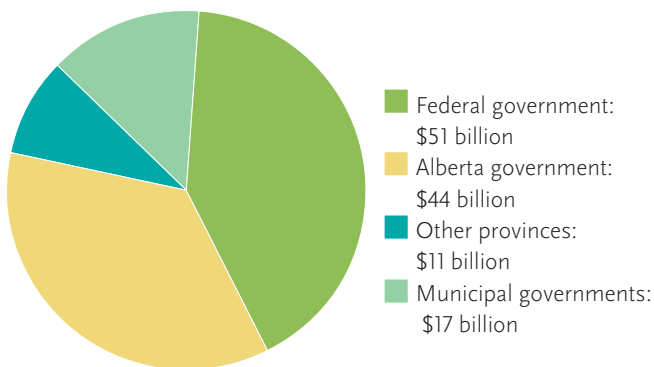
And oil and gas development is a big part of Alberta's success. Since 1971, the province's oil and gas sector has contributed:

- More than \$1.5 trillion in GDP
- 12 million person-years of employment
- \$600 billion in labour income
- \$280 billion in government revenue (all levels)

### SNAPSHOT (MARCH 2008)

- **Every dollar invested in the oil sands creates \$8 in direct and indirect activity in the Alberta economy.**
- Over 275,000 people are directly or indirectly employed in Alberta's energy sector (1 in 6 Albertans).
- Oil sands activities also contribute to substantial job creation in other sectors such as manufacturing and retail.
- **In 2006, \$14 billion was invested in oil sands projects (\$52 billion since 2000).**

### ESTIMATED GOVERNMENT TAX REVENUE FROM OIL SANDS 2000-2020



Source: Canadian Energy Research Institute

## CUMULATIVE OIL SANDS IMPACT OVER 20 YEARS

A study by the Canadian Energy Research Institute looked at the total economic impact of oil sands development and operations over a 20-year period (2000-2020).

**The study found an expected GDP benefit (in 2004 dollars) of \$885 billion; generating 6.6 million person years of employment in Canada.**

These significant financial benefits are not limited to Alberta. The entire Canadian economy gains from investment in the oil sands. Other provinces are expected to receive \$153 billion of the GDP benefit from oil sands development.

When it comes to the 6.6 million person years of employment, 27 per cent will come in Canada's other provinces.

All levels of governments also receive valuable revenue from the oil sands, with the federal government being the largest beneficiary. This study estimates \$123 billion would go to government.

### ▶ ALBERTA ECONOMY FACTS (2006)

- **Highest rate of economic growth in Canada over the past decade.**
- Economy grew by 6.8 per cent and experts predict Alberta will have one of Canada's top performing economies in the future.
- Exports of goods and services more than doubled in the past decade to \$90.1 billion.
- Investment per capita was \$22,296, more than twice the national average.
- A total of \$75.3 billion was invested, almost quadruple the 1996 level.
- 465,600 new jobs were created in the past decade.
- Unemployment rate in was the lowest in Canada at 3.4 per cent.
- The average residential property grew in value by 129 per cent between 1997 and 2007 (to \$285,662).

