



Canada's Oil Sands

Responsible Development,
Innovation, and Opportunity



Imperial Oil

ExxonMobil



“Energy security does not need to be at odds with the environment. Innovation in oil sands has been a constant theme. Since its inception, the industry has made and continues to make major technological strides in optimizing resources, innovating new processes, reducing costs, increasing efficiency, reducing greenhouse gas emissions, and reducing its environmental impact.”

– IHS CERA report, “The Role of Canadian Oil Sands in U.S. Oil Supply.”



Joliet Refinery, Illinois

FOR MORE THAN 60 YEARS, Canada's energy sector has provided a reliable supply of affordable energy to U.S. and Canadian markets, as well as jobs, tax revenue and royalties, and ever-evolving technological innovation that serves as an engine for economic growth on both sides of the border.

Through the responsible development of its oil sands, Canada continues to play an increasingly important role in meeting rising global energy demand.

ExxonMobil and Imperial Oil developed this publication to provide information on oil sands production, the opportunities it presents, and our commitment to developing these resources responsibly.

Some of the highlights include:

Page 2: A key resource for energy security

Today, Canadian oil sands represent one half of all global oil reserves accessible for private investment, and oil sands production is expected to more than double over the next two decades.

Page 3: Oil sands production today About 20 percent of Canada's oil sands can be produced through mining, while 80 percent can be recovered through in-place (or "in-situ") drilling, which has a significantly smaller surface footprint. In-situ technologies include cyclic steam simulation (CSS) and steam-assisted gravity drainage (SAGD).

Page 4: Responsible development

ExxonMobil and Imperial Oil are developing and deploying state-of-the-art technologies to reduce greenhouse gas emissions associated with production, improve water and tailings management, and reclaim and protect the land.

Page 6: Innovation ExxonMobil and Imperial Oil have a decades-long history of innovation in oil sands technology. For example, our Kearl project will employ our breakthrough paraffinic

froth treatment (PFT), which will greatly reduce greenhouse gas emissions by eliminating the traditional bitumen upgrading process associated with oil sands production.

Page 10: Opportunity Money invested in Canada's oil sands stimulates economic activity in both the U.S. and Canada, and creates hundreds of thousands of well-paying jobs. We make a special effort to engage local communities, including Aboriginal communities, and build workforce capacity among Aboriginal peoples.

Just as with any energy resource, the challenge for our industry is to ensure we develop oil sands safely and responsibly. ExxonMobil and Imperial Oil recognize the importance of that mission. Our Kearl and Cold Lake projects in Alberta are clear examples of our ability to expand energy supplies while ensuring that Canadian resources are developed in ways that minimize environmental impact.

A key resource for global energy security

Canada's oil sands are an immense resource. About 10 percent – 170 billion barrels – is considered to be economically recoverable with today's technologies, ranking Canada third behind only Saudi Arabia and Venezuela in proven reserves. By 2040, oil sands will account for 25 percent of total liquids supply in North and South America.

Oil remains the world's largest energy source and demand continues to grow, mostly because of increased needs for transportation. Oil and other liquid fuels will remain the world's largest energy source in 2040, meeting about one-third of demand. Globally, demand for liquid fuels will rise by almost 30 percent over the next 30 years.

Canada's oil sands represent a tremendous source of secure, accessible, and affordable energy to help strengthen global energy security.

The availability of such a resource, co-located with North American markets, is

even more attractive today for two reasons. First, many conventional onshore oil fields are maturing; meeting rising energy demand requires new production from less traditional resources, like oil sands. Second, most of the world's remaining reserves are owned or controlled by national governments. Only one-quarter of total global oil reserves are accessible for private sector investment, and one half of these accessible reserves are in Canada's oil sands.

New technologies have also made it more economical to produce oil sands and reduce the impact of production on the environment. Over the next two decades, production from the oil sands is expected to more than double, rising from 1.5 million barrels a day to between 3.7 million and 5.4 million barrels a day.

The International Energy Agency (IEA) has noted that "Canadian oil sands represent one of the few growth areas among non-OPEC countries," and that they "have the

potential to make a significantly greater contribution to global energy security for decades ahead by increasing the diversity of supply."

Canada's oil sands already play an important role in ensuring a secure North American energy supply. The U.S. is the largest market for Canadian oil, which accounts for about 25 percent of U.S. imports annually. According to the U.S. Department of Energy, the U.S. imported about 806 million barrels (or more than two million barrels per day) of crude oil from Canada in 2011.

Because of Canada's historical support for sound energy policies and free trade, the energy industry has been able to invest there with confidence for decades. This long-term planning and investment has created tremendous benefits for Canada – and the world.

Canada's oil sands represent a tremendous source of secure, accessible, and affordable energy.



Oil sands production today

Oil sands are a naturally occurring mixture of heavy oil, water and sand. The heavy oil is classified as bitumen. Deposits are found in the Athabasca, Peace River and Cold Lake areas of Alberta and part of Saskatchewan, with the greatest quantity found in the Athabasca region.

Bitumen – which has a consistency similar to that of peanut butter – is recovered from oil sands using two methods: mining and in-situ drilling. The method used depends on how deep the reserves are.

Canada's oil sands are located beneath approximately 54,000 square miles (140,000 square kilometers) of land. About 1,850 square miles (4,802 square kilometers), or approximately three percent of this area, contain deposits that are shallow enough to be recovered through mining operations, which are subsequently remediated. This

three percent surface area contains 20 percent of the total oil sands deposits.

The remaining 80 percent are recoverable using in-situ techniques, which have a significantly smaller surface footprint.

In-situ recovery

For in-situ recovery, water is heated and converted to steam, which is then injected into underground reservoirs that contain bitumen. The bitumen is heated by the steam, enabling it to flow to a producing well.

In-situ technologies include cyclic steam stimulation (CSS) and steam-assisted gravity drainage (SAGD). ExxonMobil and Imperial Oil invented and held the first patents on both of these technologies.

SAGD injects steam into a bitumen formation with one pipe, and then brings the

softened hydrocarbon to the surface with another pipe.

CSS, on the other hand, uses a single well to inject high-pressure steam into the reservoir. The well is allowed to soak and reversed to produce back condensed steam along with the warm, mobilized heavy oil. Our Cold Lake operation, which today is the world's largest thermal bitumen recovery project, uses CSS technology to access the resource.

Selection of in-situ technology is based on the specific qualities of the reservoir and the physical properties of the bitumen.

Responsible development

ExxonMobil and Imperial Oil are committed to operating in a way that protects the environment, complies fully with all laws and regulations, and takes into account the economic and social needs of the communities where we operate. Our environmental policy commits us to designing, operating and managing our facilities with the goal of preventing incidents and reducing adverse impacts.

Reducing greenhouse gas emissions

Most of the greenhouse gases (GHGs) associated with oil sands – anywhere from 70 to 80 percent – are emitted during consumption of the fuels derived from oil sands (e.g., motor vehicle fuels). The rest result from oil sands production: activities such as heating the water used during the separation process in mining operations, generating steam for the in-situ recovery, upgrading, and transporting the oil sands.

Since 1990, Canada's oil sands industry has reduced production-related emissions

by almost 30 percent per barrel. According to a recent report by IHS CERA (Cambridge Energy Research Associates) titled *Oil Sands, Greenhouse Gases, and US Oil Supply: Getting the Numbers Right*, “[t]he average oil sands import to the United States has well-to-wheels life-cycle GHG emissions about 6 percent higher than the average crude refined in the United States.”

ExxonMobil and Imperial Oil are committed to further reducing GHG emissions at oil sands facilities by improving energy efficiency and continuing to invest in the development of new technologies.

Cogeneration is key to reducing our energy requirements and GHG emissions because it provides an efficient means to produce electricity and steam at the same time. Cogeneration facilities at our Cold Lake in-situ operation have helped us reduce CO₂ emissions by 40 percent compared with generating electricity from coal-fired plants and processing steam from conventional boilers. Our new Kearl project and our planned Nabiye expansion at Cold Lake

will include a combined 270 megawatts (MW) of cogeneration. We estimate that Kearl's cogeneration facility will reduce CO₂ emissions by half a million tons a year compared to purchased power for the first phase of the project.

We will also use a new proprietary paraffinic froth treatment (PFT) technology at our Kearl project to remove fine clay particles and water from the bitumen, making it more suitable for pipeline transport to market. Kearl will be the first oil sands mining operation that does not require an upgrader to make a saleable crude oil. Processing bitumen once, rather than twice (in an upgrader and a refinery), reduces life-cycle GHG emissions.

A project designed like our new Kearl operation – using advanced mining techniques, energy-saving cogeneration, and producing diluted bitumen without an upgrader – will result in about the same life-cycle GHG emissions as many other oils refined in the U.S.

Improving water & tailings management

Oil sands production currently requires water to recover bitumen. The industry uses both groundwater (water from underground formations) and surface water (water from lakes and rivers) to extract bitumen from the oil sands.

ExxonMobil and Imperial Oil developed a technology in the late 1970s that has allowed approximately 95 percent of “produced water” (water extracted with oil and gas during production) to be reused for steam generation. As a result, we have been able to reduce freshwater use intensity at our Cold Lake facility by almost 90 percent since the project's inception. Other conservation initiatives are underway that, if successful, will reduce fresh water use at Cold Lake by up to an additional 30 percent from current uses.

Did You Know? Alberta's Specified Gas Emitters Regulation Was One of the First GHG Regulatory Regimes in the World

Alberta's Specified Gas Emitters Regulation (SGER), which became effective July 1, 2007, requires all facilities in Alberta emitting more than 100,000 tons of CO₂-equivalent per year to reduce their emissions intensity by 12 percent below a baseline based on 2003-2005 emissions.

New facilities – or facilities in operation on or after January 1, 2000 and with less than eight years of commercial operation – are required to reduce their emission intensity by two percent per year beginning the fourth year of operation.

SGER effectively places a cost on carbon emissions resulting from the production of oil sands.



Oil sands mining projects in the Fort McMurray area draw water from the Athabasca River. About three percent of the average natural flow of the river is allocated to the oil sands industry – one of the lowest river allocations in Canada. In 2009, the oil sands industry withdrew 0.5 percent of average total Athabasca River flows.

At our Kearl oil sands mining project, we are applying innovative ways to reduce the project's impact on water resources. Using a water storage system, we will reduce water withdrawal from the Athabasca River during low-flow periods. Kearl will also use advanced tailings technologies to recycle process water and reduce water demand.

Tailings ponds are common to all surface mining operations. Tailings contain the water, clay, sand and residual bitumen that remain when bitumen is separated from the sand. The ponds help separate the solids from the water so the water may be recycled into the process again. They also serve as storage facilities, allowing water to be stored for

Water recycling facility at Cold Lake.

low-flow periods when water availability is restricted.

During and after mining, the tailings ponds are reclaimed. Tailings are returned to the mine site as part of the overall mine closure and reclamation process. No tailings water can be released to the Athabasca River or any other watercourse. The possibility of seepage is anticipated when tailings ponds are engineered and built, and containment systems and monitoring wells are required. We are supporting additional research and development activities to further enhance the management of tailings ponds.

Our researchers are currently working on a number of new technologies that could lead to a bitumen extraction process that significantly reduces water use, eliminates tailings ponds and reduces greenhouse gas intensity. This research effort will take time, but ultimately, these technologies could be applied to future oil sands opportunities.

On December 13, 2010, Canada's oil sands mining developers announced groundbreaking cooperation on tailings research and development with a view to streamlining work on eliminating tailings ponds. The companies, including Imperial Oil, have agreed to pool their scientific research, share their findings, and eliminate proprietary intellectual property on past

efforts. Collaborators will also make past research available to peers, government, academia, and others with an interest in improving tailings management.

Reclaiming & protecting the land

At all our oil sands operations, ExxonMobil and Imperial Oil have programs in place to protect and reclaim land.

The plans for our Kearl project include a major commitment to progressive land reclamation, in which land used early in the project will be reclaimed as mining is expanded to new areas. In developing our reclamation plans for Kearl, we have worked closely with neighboring oil sands operations to make sure that drainage, reclamation and closure plans are integrated. We also continue to engage local stakeholders in reclamation planning so that reclaimed lands will provide improved wildlife capabilities and will be accessible for traditional land use by the local Aboriginal community.

In-situ operations have a surface footprint similar to that of conventional oil and gas operations, and we have developed an innovative approach to further reduce the surface footprint at our Cold Lake facility. Our "megapad" approach for Cold Lake expansion enables us to increase the number of wells drilled from a single surface location allowing more efficient resource recovery and reduced development costs.

Did You Know? Alberta's Directive 074:

- Requires the reduction of tailings and the establishment of target dates for closure and reclamation of tailings ponds.
- Between 2012 and 2016, requires the implementation of plans to virtually eliminate growth in wet tailings.
- After 2016, industry must process wet tailings at the same rate they are produced.

Surface use requirements will be reduced by more than 40 percent with this new approach.

We have an ongoing program to reclaim land impacted by the Cold Lake operation. So far, more than 1,500 acres of disturbed land have been permanently reclaimed. Over the last decade, land reclamation at the operation has included planting more than 800,000 trees and shrubs. The predominant species planted are white spruce, aspen, Jack pine, birch, willow and alder. All of these species are indigenous to the area.

Reclamation plans at our Cold Lake operation are designed to address local environmental ecosystems such as wetlands. We have recently teamed with Ducks Unlimited Canada on a pilot project to determine how best to restore the natural functions of a wetland when reclaiming a well site in the area. Early indications from ongoing monitoring have shown positive results with signs of re-vegetation.

A new environmental monitoring program established jointly by the Canadian federal and Alberta provincial governments will use sound science to improve the robustness of environmental reporting. The new program, announced in February 2012, will contribute to improved performance reporting, regional planning, and industry performance improvement as oil sands production expands.

Innovation

From the outset, advances in technology have been the key to economic and responsible development of oil sands resources.

Over the past 40 years, ExxonMobil has invested more than 2,000 work years in heavy oil research. These efforts include developing proprietary in-situ recovery processes, enhancing surface-related technologies to improve the economics of mining operations, and creating technologies to increase the value of heavy oil and aid in its transport.

Imperial Oil's Calgary research center is considered to be one of the leading oil sands research facilities in the world. Since 1961, Imperial has held more than 160 upstream patents, including the first patents on cyclic steam stimulation (CSS) and steam-assisted gravity drainage (SAGD), two key processes used across the industry in bitumen recovery. Today, those inventions are continually being refined at the center to improve productivity and environmental performance.

In addition to the research carried out at our own Calgary laboratory, we sponsor a

wide range of energy research programs at Canadian universities and other institutions.

In March 2012, Canada's Oil Sands Innovation Alliance (COSIA) was launched to pool twelve companies' expertise in oil sands technologies and operating practices. COSIA builds upon independent research and development already taking place, and will focus immediately on four environmental priority areas: improving water use; continuing efforts to reduce greenhouse gas emissions intensity; reducing impact on land; and tailings management. COSIA is intended to accelerate the pace of environmental performance improvement and reduce the amount of time between drawing board concepts and practical application.

Supporting oil sands research

Imperial Oil is the founding sponsor of the Centre for Oil Sands Innovation (COSI) at the University of Alberta. The aim of this unique Canadian center of excellence is to conduct breakthrough research that reduces the use of water and energy

**Reservoir simulator at Imperial Oil's
Calgary Research Center**



and decreases the footprint of oil sands development.

Since 2005, we have contributed \$10 million and more than \$1 million of in-kind support to COSI, and in 2010, we renewed our commitment by pledging another \$10 million over five years.

COSI's growing research portfolio now engages researchers from six Canadian universities. Current projects involve more than 100 research personnel from the University of Alberta, the University of British Columbia, the University of Victoria, the University of Ottawa, the University of Toronto, Queen's University and the National Research Council. In the constant pursuit of excellence in research at COSI, contacts have been established with universities in the United States, Germany and Australia.

Researchers are working on more than 20 projects in four key program areas aimed at advancing responsible development of Alberta's oil sands and improved environmental performance. Projects include research into non-aqueous extraction of bitumen. This research could lead to important breakthroughs in bitumen recovery,

water use and management of tailings.

In addition to COSI, Imperial Oil also continues to be one of several oil sands operators funding leading-edge research conducted by the Canadian Oil Sands Network for Research and Development (CONRAD). Since 2006, we have contributed \$1.3 million to support research conducted under CONRAD, including programs aimed at remediation and reclamation oil sands mining sites.

Exploring new recovery technologies

ExxonMobil and Imperial Oil are leaders in oil sands innovation, and continue to deploy new breakthroughs that make production more efficient. These include:

LASER: After more than a decade of research and pilot testing, we are deploying a new technology called LASER (liquid addition to steam to enhance recovery) that complements our CSS processes. LASER co-injects low concentrations of pipeline diluent (natural gas condensate) with steam.

The diluent helps to further reduce the viscosity of the bitumen, aiding its ability to flow. The condensed water, diluent and heated oil are produced back from the same well after a soak phase. This results in a more efficient production process. By adding diluent, more resource can be recovered from mature wells for the same amount of steam injected in traditional CSS production. The LASER technology has the potential to reduce GHG intensity by more than 25 percent.

Solvent-Assisted SAGD: Recently, we commissioned a pilot project at Cold Lake that adds light hydrocarbon solvent to SAGD wells, which is recovered during production. By adding solvent to steam, we can produce more bitumen with the same amount of steam, resulting in lower energy and GHG emission intensity. The objective is to improve the SAGD process similar to the improvements LASER has shown over traditional CSS. This technology has the potential to enhance recovery for certain reservoirs in the Cold Lake and Athabasca areas. Steam injection for the pilot project's well pairs is underway. The pilot project received recognition from the Alberta government through the Innovative Energy Technologies Program.

Steam flooding: We also piloted a steam-flooding technology to improve resource recovery in mature portions of the field at Cold Lake. Results confirmed that the technology can improve resource recovery and reduce GHG emission intensity by up to 30 percent. We are evaluating expanding use of the technology to other parts of the Cold Lake operation.

Paraffinic Froth Treatment: The Kearn project will use our proprietary paraffinic froth treatment technology to process bitumen on-site to where it can be blended with natural gas condensates to create a diluted bitumen product. Diluted bitumen is suitable for transportation direct to market via pipeline from the mine site. This process eliminates the cost and environmental impacts of an on-site upgrader. Since Kearn



will be connected to a substantial North American pipeline system, diluted bitumen can be transported directly to refineries that are already configured to process heavy oil and bitumen.

Cyclic Solvent Process: We are also developing a cyclic solvent process that injects solvent to reduce the viscosity of bitumen deposits and facilitate economic recovery. By eliminating the use of steam to mobilize the bitumen deposits, the process significantly improves energy efficiency and reduces CO₂ emission intensity by about 90 percent.

A \$100 million field pilot was sanctioned in 2011 and is expected to start up in late 2013.

In addition to deploying and refining existing technologies, ExxonMobil and Imperial Oil are pursuing new technologies that could further enhance oil sands production even further.

Non-Aqueous Extraction:

Non-Aqueous Extraction (NAE) is an emerging technology that has the potential to virtually eliminate the need for water and thus revolutionize bitumen recovery for oil sands mining operations. NAE will incorporate a naturally occurring light hydrocarbon liquid from natural gas production into the bitumen recovery process, and has the potential to create dry tailings and eliminate the need for wet tailings ponds.

While this record of innovation is not unique to oil sands, it provides an excellent example of what has been occurring for decades of human progress enabled by advances in energy-related technologies and fuel sources. An unwavering commitment to innovation and technology will continue to enable substantial progress over time, expanding opportunities for the economic and responsible development of Canada's oil sands resource to support growing energy needs. Investing in research and technology with constancy of purpose is critical to finding cleaner, more efficient ways of developing the oil sands.

Up close:

Next-generation oil sands production at Kearl

Located 70 kilometers north of Fort McMurray is the Kearl oil sands project, jointly owned by Imperial Oil (operator) and ExxonMobil Canada. The Kearl project will eventually produce up to 345,000 bpd (initial development will produce more than 110,000 bpd), offsetting declines in conventional oil production and helping meet North America's energy demands for years to come.

With 4.6 billion barrels of recoverable bitumen resource, Kearl is one of Canada's largest and highest quality oil sands deposits. There is minimal exploration risk because the ore is close to the surface and the volume and quality of the resource has been thoroughly assessed.

Current plans do not include traditional on-site bitumen upgrading facilities for the initial development. Our patented

paraffinic froth treatment (PFT) process provides low-cost, low-impact processing necessary to ship this product to existing refineries. Options for the refining or sale of the diluted bitumen product, including possible integration with North American refineries owned by ExxonMobil and Imperial Oil, are being evaluated.

Minimizing environmental impact

Air emissions and their cumulative effects are a key focus area. Kearl has selected the most energy-efficient, commercially proven and economically viable technologies available to minimize emissions and greenhouse gases. Kearl will use cogeneration for steam and electricity production, a low-energy extraction process to recover bitumen, and heat integration between the extraction and PFT facilities to minimize energy consumption.

The PFT process removes a portion of the heavy end of the barrel (asphaltenes) using less energy than would be required to remove the same heavy ends in a coker at an upgrader, thus reducing greenhouse gas emissions. Kearl's cogeneration facilities will reduce CO₂ emissions by half a million tons a year compared to purchased power for the first phase of the project.

We believe the most effective way to reduce greenhouse gases is to continue to improve energy efficiency. Over the lifetime of the project, new technologies will be evaluated and applied to improve efficiency and further reduce emissions. Energy audits and benchmarking performance measurements will drive these improvements.

We are also constructing water storage to reduce water withdrawals from the Athabasca River during low flow periods, and are conserving the topsoil and



Land reclamation at Kearl



peat that we need to remove to prepare the site for development. The same topsoil and peat will be used to progressively reclaim the land once an area is no longer being mined.

We continue to engage local stakeholders in our reclamation planning so the lands reclaimed will be accessible for traditional use by the local Aboriginal community.

Together, ExxonMobil and Imperial Oil have a strong track-record of developing new technologies and establishing clear goals that guide project planning and execution. Over the life of the project, Kearl will incorporate ongoing improvements that will maximize efficiencies and reduce environmental impacts.

Regulatory compliance

The Kearl project was subject to a joint review by provincial and federal government representatives and 16 days of public hearings in late 2006. The panel thoroughly reviewed various stakeholder concerns, such as: social and economic effects, mine plan and resource conservation, tailings management, reclamation, air emissions, surface water, aquatic resources, traditional land use and human health. The Alberta government granted its approval of the project through an Order-in-Council in May 2007. Canada's

federal government followed with their approval through an Order-in Council in August 2007. The project received the necessary federal authorization in June 2008 to allow work at the site.

Kearl's tailings plan was approved with conditions by Alberta's Energy Resources Conservation Board August 11, 2010 in accordance with Directive 074. The directive applies to all minable oil sands operations.

Highlights of the Kearl Project

Kearl is expected to have a project life of over 40 years, with maximum production capacity up to 345,000 bpd.

Our approach to responsible development includes:

- **A comprehensive environmental and socio-economic assessment that addresses the benefits and impacts over the entire life of the project.**
- **One integrated, progressive reclamation plan for the whole lease area that optimizes the balance between developed, undisturbed and reclaimed areas.**
- **One external tailings area that will be emptied and reclaimed as soon as space is available to process and return remaining tailings into mined areas. This activity will be conducted in compliance with government regulations.**
- **Staged development plans for additions to Kearl Lake that will compensate for disturbance of fish habitat in the mining area.**

Opportunity

Today, every dollar invested in the oil sands creates about \$8 in economic activity, with much of that value generated outside Alberta – including other Canadian provinces, the United States and around the world. Five decades of oil sands research and development has enabled a new North American economic engine and resulted in a secure, reliable, and easily transported source of energy for both Canada and the United States.

According to a June 2011 study by the Canadian Energy Research Institute (CERI), *Economic Impacts of Staged Development of Oil Sands Projects in Alberta (2010-2035)*, “... 80,000 U.S. jobs were supported [in 2010] by existing oil sands projects but that without additional pipeline capacity, substantial future benefits will be lost. In particular, Keystone XL pipeline alone could support close to 85,000 U.S. jobs in 2020. Without any pipeline constraints, oil sands development could support 600,000 U.S. jobs by 2035.” In other words, about 500,000 new U.S. jobs would be created.

Other findings, assuming all oil sands projects included in CERI’s “Realistic Forecast” are permitted to develop (Case 4) include:

- U.S. GDP growth: “Total cumulative GDP impact in the US ...is estimated to be CAD\$774 billion over the 25-year projection period.”
- Canadian GDP growth: “The cumulative sum of additional GDP from 2010 to 2035 as a result of the continued operation of existing oil sands projects, the start-up of projects under construction, and the development of new projects is estimated at \$4,925 billion.”
- Canadian job growth: “Employment in Canada (direct, indirect, and induced) is expected to grow from 390,000 jobs to a peak of 1,600,000 jobs in 2035.”
- Growth resulting from additional pipeline capacity: “Besides the Keystone

XL and Northern Gateway projects, additional pipeline capacity would be needed in order to transport the volumes of crude bitumen produced, assuming that all oil sands projects – on stream, under construction, approved, approved – on hold, awaiting approval, and announced – are developed. In this hypothetical situation, CERI projects that a total of 2.3 MMBPD of pipeline capacity, above and beyond Keystone XL and Gateway, could be feasibly constructed. This would grow export capacity significantly and bring a high degree of GDP and employment growth.”

- Consequences of cancelling additional pipeline capacity: “Cancellation of this extra capacity, though, would result in significant lost growth. Approximately \$1.6 trillion of additional Canadian GDP growth over the study period would be lost, with 95 percent of that GDP lost within the province of Alberta. In the United States, an additional \$377 billion in GDP would be lost, with 35 percent lost in PADD II, 28 percent lost in PADD I, 18 percent lost in PADD V, 14 percent lost in PADD III, and the remaining 5 percent lost in PADD IV.”



Up close: Aboriginal engagement and consultation

Our goal is to establish lasting relationships built on mutual trust and respect with Aboriginal communities located near where we explore, develop and operate throughout Canada. Engaging Aboriginal communities in open and honest consultation helps us understand their perspectives on issues that matter to both of us, and also deal constructively with differing views.

Effective consultation is founded on respect; respect for the legal rights of Aboriginal people, as well as their traditional practices, activities, language and decision-making processes. We have developed a corporate Aboriginal consultation protocol to provide practical information on Aboriginal engagement to our managers and leaders who regularly work with Aboriginal stakeholders.

In developing our Kearl project, we have established advisory committees with the Athabasca Chipewyan First Nation and the Mikisew Cree First Nation as well as an Elder’s council with the Fort McKay First Nation. The groups, which include Imperial Oil staff and community residents, allow our Aboriginal neighbors to have ongoing communication with Imperial on the project and its impacts. Elders from Fort McKay and Fort Chipewyan have participated in tours of the project site, where they learned more about the project and had an opportunity to discuss concerns, including access to the lease area for trapping. In response, we revised access management plans to ensure trappers can safely access traplines in lease areas not actively being mined.

Our operations and growth projects present many career opportunities. Our goal is to ensure that Aboriginal people have the background and skills they need to take advantage of them, while also helping to meet our business



needs for personnel. Supporting education and training programs to build workforce capacity in Aboriginal communities just makes good sense for everyone. At our Cold Lake operation, we have worked with local contractors to organize a job shadowing day for Aboriginal high school students interested in careers in the trades.

Supporting Aboriginal businesses helps our company by ensuring we have the goods and services we need to support our growth projects and existing operations, and it helps Aboriginal communities by fostering entrepreneurship and creating employment in the community. In conjunction with the Nabiye expansion at our Cold Lake operation, we hosted an Aboriginal Business Open House at the Bonnyville Centennial Centre to allow local Aboriginal people and businesses greater access to business opportunities. Attendees at the open house were able to learn about our procurement, contracting and qualification process.

We are also very proud to support “Indigenous Women in Community Leadership”, a new program offered by the Coady International Institute at St. Francis Xavier University, in Nova Scotia. The program is designed to support First Nations, Métis and Inuit women in strengthening and building their communities. The program seeks to engage the next generation of Indigenous women leaders and provide them with a foundation of practical leadership skills and experience, benefit from the wisdom of established Indigenous women leaders, produce inspiring resources that can be used to demonstrate successful indigenous community development, and support active community-driven development.

Aboriginal-owned Seven Lakes Oilfield Services is a major contractor at our Cold Lake operations.

Our responsibility is to maintain the strong balance between development and protection of the environment.



Conclusion

Canada's oil sands are a significant, secure energy resource for the United States and an engine of economic growth for North America. In the years and decades to come, oil sands production offers a unique opportunity to increase North American oil supplies, strengthen energy security, and create jobs and economic activity over the long term.

ExxonMobil and Imperial Oil recognize that with this opportunity come significant responsibility.

Our responsibility is to maintain the strong balance between development and protection of the environment. And the key

to maintaining that balance is innovation and technology.

From the first hot water extraction process developed in the 1920s, which unlocked the potential of Canada's world-class resource, to today's emerging mining and in-situ technologies, innovation has opened new opportunities, improved economic performance and reduced the industry's environmental footprint by making our operations more efficient.

ExxonMobil and Imperial Oil are committed to further advances in oil sands technology. The size and quality of the research effort underway are clear examples of that commitment.

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Imperial Oil



CAUTIONARY STATEMENT: Plans and projections in this document are forward-looking statements. Actual future results, including emissions reductions, resource recoveries and the impact of new technologies, could differ materially due to factors including changes in long-term oil or gas prices or other market conditions affecting the oil and gas industries; changes in law or government regulation; technical difficulties; future technological developments by ExxonMobil or others; and other factors discussed under the heading "Factors Affecting Future Results" in the "Investors" section of our website at www.exxonmobil.com.