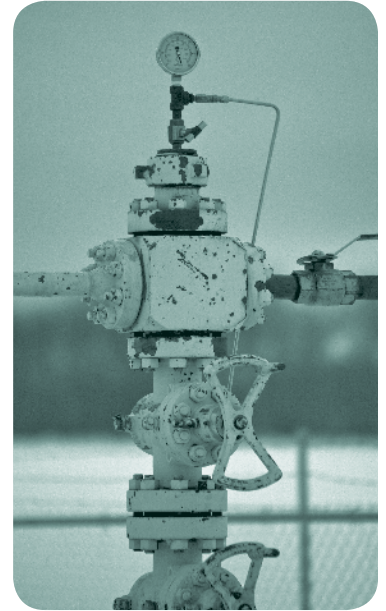


ALBERTA OIL & GAS INDUSTRY

QUARTERLY UPDATE

WINTER 2013

Reporting on the period: Sept. 27, 2013 to Dec. 20, 2013



Alberta 
Government

All about oil and gas*

Technology is setting the stage for another boom in Alberta's non-oil sands oil and natural gas industry. Until the last few years, the sun had slowly been setting on Alberta's conventional oil and natural gas industry. Oil production had declined from a peak of 1.43 million barrels per day in 1973 to a low of around 460,000 barrels per day in 2010.

But things are changing for the better, as increased implementation of long horizontal wells and multistage fracturing



TABLE OF CONTENTS

02 **All about oil and gas**

03 **Oil plays**

04 **Natural gas plays**

05-06 **Government update**

07-08 **What's new in the oil and gas industry**

09 **Technology update**

10 **Labour update**

11-13 **Oil and gas statistics**

14-15 **Promising tight oil plays**

16 **Contacts**

in tight oil plays across the province—not to mention new provincial royalty incentives to encourage drilling—has crude oil drilling activity and production on the upswing. Although natural gas activity has slowed due to weak prices, Alberta is poised to benefit once a price correction occurs.

In fact, the tight oil revolution that began in the United States and gradually moved north into Alberta marks the dawning of a new day for oil and natural gas exploration and production in the province.

In Alberta, the new technology is being used in an increasing number of oil plays. Among the most advanced plays are the Cardium in west-central Alberta, the Beaverhill Lake Carbonates near Swan Hills, the Viking in east-central Alberta and at Red Water north of Edmonton, in the Pemiscot at Princess in southern Alberta, and at Judy Creek in northwestern Alberta. Additionally, emerging plays include the Alberta Bakken in the southern reaches of the province, and in oil windows in the Duvernay and Montney shale.

High drilling activity in these areas will offset the steep decline in Alberta conventional production that would otherwise be expected.

In 2012, 2,854 successful oil wells were drilled, a decrease of 10.2 per cent from 2011. The number of new wells placed on production for 2012 was 3,107. From this total, 2,379 new horizontal oil wells (including those using multistage fracturing technology) were brought on production in 2012, an increase of 31 per cent from the 2011 level of 1,818 horizontal wells. This raises the total number of horizontal wells to 9,664.

The number of new vertical oil wells placed on production is projected to be 728 in 2013 and is expected to decline to 520 wells in 2022. This well count is about 50 per cent lower than last year's forecast and reflects the view that many new wells will be horizontal wells, with many of those using multistage fracturing technology.

The number of new horizontal oil wells is projected to decrease from 2,379 in 2012 to 2,310 in 2013, and to decline gradually to 2,080 in 2022. The forecast number of horizontal oil wells has significantly increased relative to last year's forecast and reflects actual activity in 2012, industry's projection of increased

horizontal drillings and anticipated continued strong crude oil prices.

The number of new natural gas well connections dropped significantly in 2012 and has not been this low since 1992. In 2012, 1,189 new conventional natural gas connections were placed on production in the province, a decrease of 49 per cent from 2011. This is the sixth straight year of reductions in conventional gas connections.

The number of horizontal gas wells drilled and connected in the province is increasing as a percentage of the total. In 2012, about 53 per cent of new gas connections were horizontal wells compared with 25 per cent in 2011 based on the revised well connection counts.

The numbers of new conventional gas connections over the forecast period are projected to be 1,100 in 2013 and gradually increase to 1,425 by 2022. The forecast number of connections is significantly lower than last year's forecast of 3,800 largely due to the shift from vertical and directional wells to more capital-intensive, but highly productive, horizontal wells.

Although low natural gas prices have reduced drilling activity in Alberta for that commodity the past few years, when prices rebound the province will be well positioned to capitalize.

Canada is the third-largest natural gas producer in the world, with about 80 per cent of the country's gas being produced in Alberta. According to provincial figures, at the end of 2012, remaining established reserves of conventional natural gas stood at 33 trillion cubic feet, while remaining established coalbed methane (CBM) gas reserves stood at 2.4 trillion cubic feet. The province estimates the remaining ultimate potential of marketable conventional natural gas at 74 trillion cubic feet.

Although conventional natural gas remains a very important part of Alberta's natural gas supply, horizontal drilling and multistage fracturing now allow for development of natural gas from a new source—unconventional natural gas resources. Aside from CBM, Alberta's unconventional natural gas resources include tight gas (natural gas trapped in low-permeability sedimentary rocks, such as sandstone or limestone) and shale gas (trapped in shale rock). ■

All photos © 2013,
JuneWarren-Nickle's Energy Group

*This publication contains information about Alberta's oil and gas industry, excluding oil sands. For information on the oil sands, please refer to the Alberta Oil Sands Industry Quarterly Update on this [website](#).

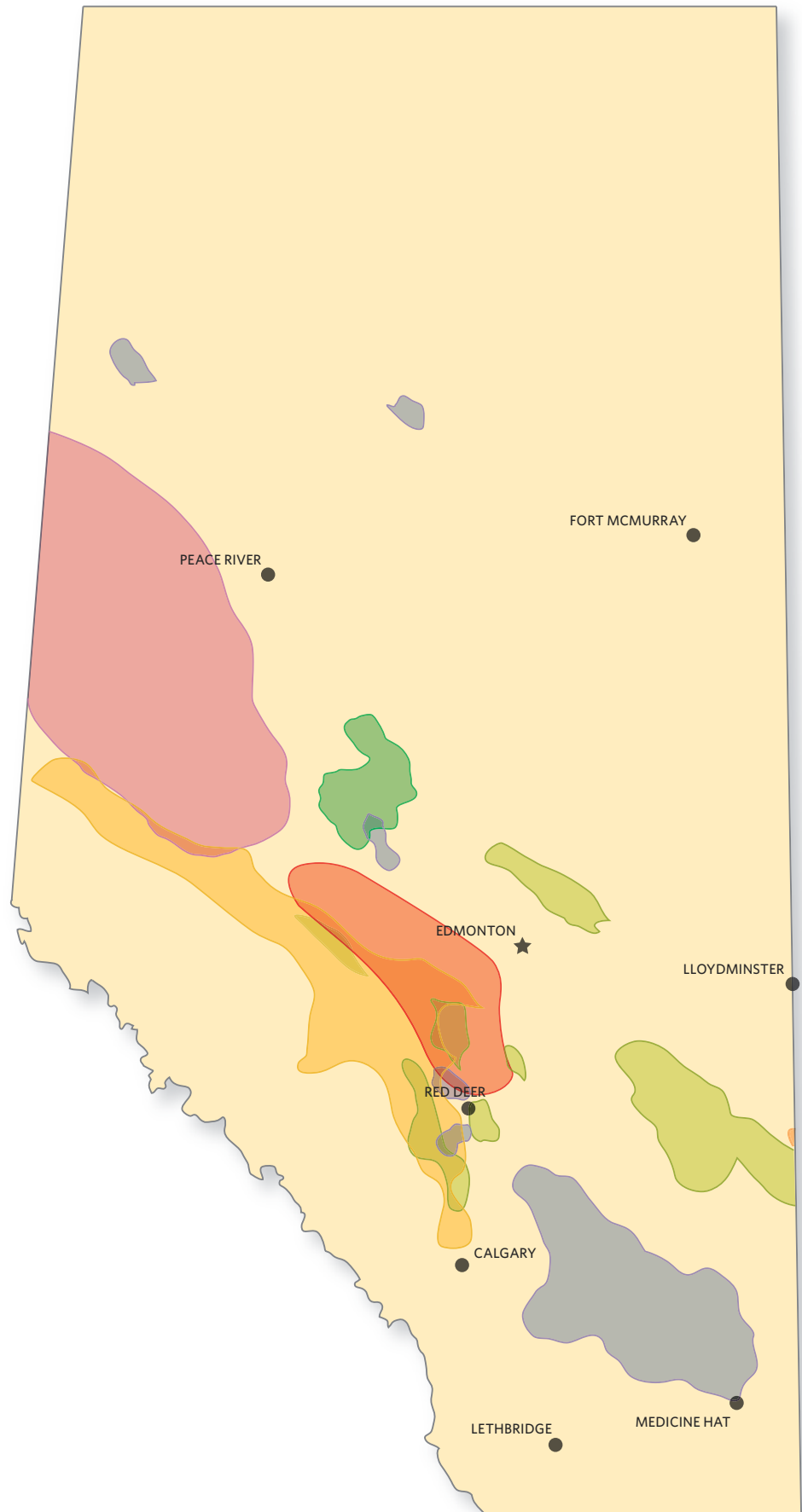
Oil plays

The Alberta Energy Regulator (AER) estimates the remaining established reserves of conventional crude oil in Alberta to be 1.7 billion barrels, representing about one-third of Canada's remaining conventional reserves.

This is a year-over-year increase of 9.5 per cent, resulting from production, reserves adjustments and additions from drilling that occurred during 2011.

In 1994, based on the geological prospects at that time, the AER estimated the ultimate potential of conventional crude oil to be 19.7 billion barrels. Given recent reserve growth in low permeability, or tight oil plays, the AER believes that this estimate may be low.

Starting in 2010, total crude oil production in Alberta reversed the downward trend that was the norm since the early 1970s. In 2010 and 2011, light-medium crude oil production began to increase as a result of increased, mainly horizontal, drilling activity with the introduction of multistage hydraulic fracturing technology. The successful application of this technology and increased drilling resulted in total crude oil production increasing by seven per cent in 2011. Alberta's production of conventional crude oil totalled 179 million barrels in 2011.



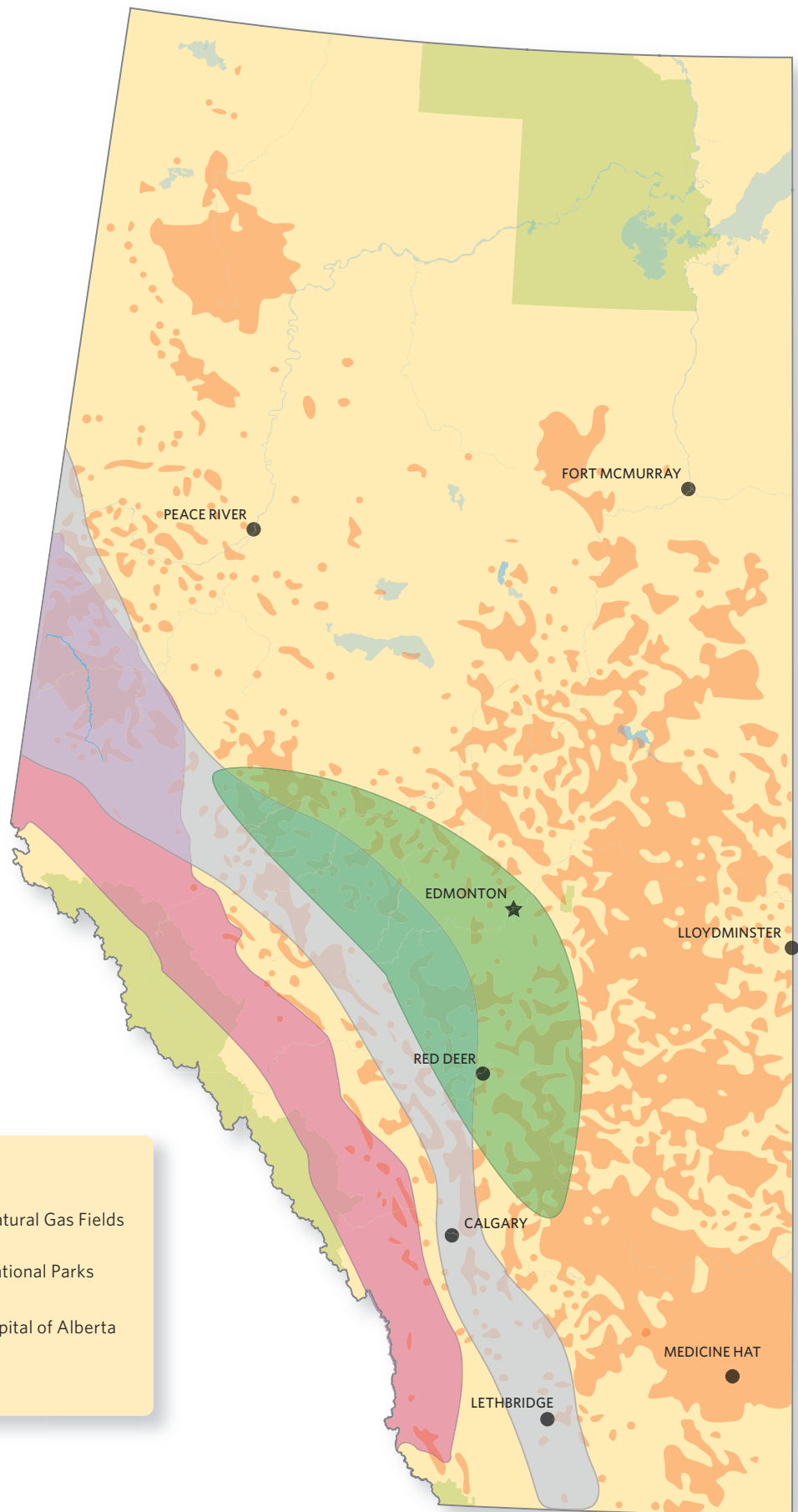
OIL PLAYS

-  Beaverhill Lake/Swan Hills/Slave Point Carbonate
-  Cardium
-  Duvernay
-  Montney/Doig
-  Pekisko
-  Viking

Natural gas plays

Alberta's natural gas bounty is plentiful and is produced from both conventional and unconventional reserves. While the vast majority of the province's natural gas is still produced from conventional sources, growing natural gas volumes from coal, shale and tight formations will also be strong contributors going forward.

Alberta has a large natural gas resource base, with remaining established reserves of about 33 trillion cubic feet and estimated potential of up to 500 trillion cubic feet of natural gas from the coalbed methane resource. In addition, a large-scale resource assessment of shale gas potential in Alberta is underway and could significantly add to the natural gas prospects for the province.



GAS PLAYS

 Deep Basin Cretaceous Multi-Zone Gas Play	 Natural Gas Fields
 Nikanassin Deep Basin Gas Play	 National Parks
 Montney Hybrid Tight Gas/Shale Play	 Capital of Alberta

GOVERNMENT

UPDATE



ALBERTA FORTIFIES ENERGY RELATIONSHIP WITH ASIA

Alberta and China signed an agreement in October to increase energy trade and collaboration between the two jurisdictions.

The historic Framework Agreement on Sustainable Energy Development, signed by Alberta Energy Minister Ken Hughes and China's National Energy Administration chief Wu Xinxiang, is a framework that seeks to set out concrete actions to strengthen trade ties.

This non-binding intergovernmental agreement is the first of its kind between the Chinese central government and a sub-national government of Canada. It's aligned with the existing Natural Resources Canada and National Energy Administration agreement.

Chinese President Xi Jinping and Canadian Governor General David Johnston also attended the signing in the Great Hall of the People in Beijing, signalling the significance of Alberta and China's future energy trade and collaboration.

NEW ACT HELPS ALBERTA REACH ENERGY POTENTIAL

The Alberta government is proposing legislation that will help Albertans get better prices for their energy resources.

The Building New Petroleum Markets Act will boost the government's ability to respond more quickly to changing market conditions and empower it to proactively seek out opportunities for Alberta's energy products. The legislation allows the minister of energy to set the strategic priorities of the Alberta Petroleum Marketing Commission (APMC).

The APMC is responsible for selling the conventional oil that government receives in lieu of cash royalties and for implementing the province's bitumen royalty-in-kind (BRIK) policy.

BRIK barrels have been used to support two projects to date—the Sturgeon upgrader and refinery in Redwater, Alta., and TransCanada Corporation's proposed Energy East Pipeline, which will transport energy products to eastern Canadian refineries.

The proposed Building New Petroleum Markets Act will:

- Allow the minister of energy to provide specific direction to the APMC, based on the public interest and government priorities;
- Modernize and improve the corporate rules under which the APMC currently operates, including giving the government the ability to appoint a board of up to seven directors instead of the current three, including expertise from outside the public service; and
- Clarify financial tools available to the APMC, which could include providing loans or making equity investments in projects, when authorized by the government.

NEB REPORT HIGHLIGHTS AMPLE ENERGY SUPPLY

The National Energy Board (NEB) released in November its report *Canada's Energy Future 2013: Energy Supply and Demand Projections to 2035* (EF 2013).

The results indicate there will be enough supply to meet Canada's growing energy needs for the foreseeable future. In fact, over the next 20 years, the NEB projects energy production levels to exceed domestic requirements, resulting in growing amounts of energy available for export.

"Canada has vast energy resources—more than enough to meet Canada's growing energy demand," said Gaetan Caron, chair and chief executive officer of the NEB.

"Canada also has one of the highest standards of living in the world, in part due to our energy resources, which are a key driver of the economy."

Total Canadian energy production will grow substantially between now and 2035, with oil leading the way.

Oil production increases by 75 per cent. Natural gas production increases by 25 per cent. Canadian total electricity generation and supply increases over the projection period as well. Natural gas-fired power generation capacity increases substantially, largely at the expense of coal-fired capacity, and non-hydro renewable capacity doubles its share of the capacity mix.

Canadian energy needs also increase, but at a slower rate than the historical trend. Canadian demand for oil and ►



Government update *continued*



natural gas increases by 28 per cent, with hydrocarbons continuing to be the primary source of energy to heat homes and businesses, transport people and goods, and many other functions that are integral to Canadians' standard of living.

Improvements in energy efficiency will mean Canadians will be using less energy in the future to produce more. By 2035, the energy used per unit of economic output is projected to be 20 per cent lower than current levels. As a result of new passenger vehicle emission standards, EF 2013 also reports the reversal of the long-term upward trend in passenger transportation energy use.

≡ MONTNEY FORMATION ONE OF THE LARGEST GAS RESOURCES IN THE WORLD, REPORT SAYS

The National Energy Board (NEB), the BC Oil and Gas Commission, the Alberta Energy Regulator and the British Columbia Ministry of Natural Gas Development jointly released the first study ever to estimate the marketable unconventional petroleum resources in the Montney formation.

Recent advances in technology, such as multistage hydraulic fracturing, have made it possible to economically develop unconventional gas and oil in the Montney over the past several years, but little had been known about its total potential. The report estimates that there is approximately:

- 449 trillion cubic feet of marketable natural gas;
- 14.52 billion barrels of marketable natural gas liquids (NGLs); and
- 1.23 billion barrels of marketable oil.

Although the findings for marketable NGLs and oil are notable, the estimated quantity of natural gas is extensive.

"At current consumption rates, the Montney gas resource would meet Canadian needs for 145 years," said Gaetan Caron, the NEB's chairman and chief executive officer. "The report clearly shows that Canadian energy markets will be well supplied with natural gas far into the future."

By combining the Montney's marketable gas estimate with prior assessments, the total ultimate potential remaining in western Canada is 632 trillion cubic feet. This estimate is likely to increase as additional unconventional potential from other formations is estimated.

Overall, Canada has a very large remaining natural gas resource base in western Canada to serve its markets into the future.

≡ NATIONAL ENERGY BOARD TO JOIN FRACFOCUS.CA

The National Energy Board (NEB) will soon request companies regulated under the Canada Oil and Gas Operations Act (COGOA) to publicly disclose information on the fluids used in hydraulic fracturing operations.

The NEB signed an agreement with the British Columbia Oil and Gas Commission, and the U.S.-based Ground Water Protection Council and the Interstate Oil and Gas Compact Commission to participate in the fracfocus.ca website.

The NEB will request regulated companies to disclose information on the hydraulic fracturing practices and fluids they use in their operations on the fracfocus.ca website 30 days after the hydraulic fracturing operation has been completed.

Under the Canada Petroleum Resources Act (CPRA), certain information is protected by privilege for up to two years. NEB-regulated companies will be asked to sign a waiver allowing disclosure of an operator's hydraulic fracturing chemicals on the fracfocus.ca website prior to the end of the privilege period.

The NEB's full participation will become effective once necessary website updates have been completed in early 2014.

≡ NEB DELIVERS ON COMMITMENT TO RELEASE A DRAFT SAFETY CULTURE FRAMEWORK AND DEFINITION

The National Energy Board (NEB) released in October a discussion paper titled *Advancing Safety in the Oil and Gas Industry: Draft Safety Culture Framework*. The NEB will be seeking comments from the public and industry on this body of work until Jan. 30, 2014.

The NEB, the Canada-Nova Scotia Offshore Petroleum Board and the Canada-Newfoundland and Labrador Offshore Petroleum Board worked together to propose a common draft safety culture definition and a framework. This body of work was developed to promote learning and a shared understanding of the emerging discipline of safety culture across the oil and gas sector in Canada. It is also intended to express the NEB's expectations of its regulated companies to build and sustain a positive safety culture.

"As federal regulators of the oil and gas industry, we considered it important to have consistent expectations of regulated companies when it came to safety culture," said Gaetan Caron, NEB chairman and chief executive officer.

"With strong, well-implemented management systems and a safety culture that permeates every aspect of the organization, the goal of zero incidents can be a reality." ■



What's new in the oil and gas industry

FORMER U.S. ENERGY SECRETARY ENVIES ALBERTA'S CARBON TAX

Alberta's carbon emissions framework—which applies a \$15-per-tonne levy against large greenhouse gas emitters that pays for technology research—is “a stroke of genius,” said Steven Chu, former U.S. secretary of energy, but unfortunately most Americans don't know about it.

“It shows, number one, that the people of Alberta care and [the province] will penalize itself,” Chu told the Calgary Chamber of Commerce recently. “But it's totally the right way, because it's driving the incentive of the companies.... As they lower their carbon emissions, they don't have to [pay] as much, but [they're] doing the right thing.”

The United States should be doing the same thing, and it may have to start with individual states, said Chu, who recently returned to Stanford University as a professor of physics and molecular and cellular physiology after a four-year stint—which ended in April—as the 12th U.S. secretary of energy.

His panel partner, Jim Prentice, senior executive vice-president and vice-chairman of CIBC, agreed the carbon tax is one of the great things that's been done in Alberta for the environment.

Prentice joined CIBC in January 2011 after spending five years in senior ministerial positions in the Canadian government: minister of industry, minister of the environment, and minister of aboriginal affairs and northern development.

He said building pipelines to the West Coast is a national imperative and virtually

nothing is as important as the pipelines to enable access to Asian markets.

Prentice also voiced his support for the Keystone Pipeline, saying the very fact that a permit is required is a bit anachronistic in light of the free-trade framework between Canada and the United States.

ALBERTA LAND SALE UPDATE

Alberta's large land spread at the eastern side of the province posted at the November 20 sale of petroleum and natural gas rights didn't produce much interest, as the province brought in \$26.76 million.

A total of 244,029 hectares exchanged hands at an average price of \$109.65 per hectare, which was the second-lowest per-hectare price paid at a single sale this year. Year-to-date, the government has attracted \$647.74 million in bonus bids on 2.15 million hectares at an average of \$300.94 per hectare. By the same point in 2012, Alberta had collected \$1.03 billion for 2.83 million hectares at an average price of \$366.11 per hectare.

Fifty-seven lease parcels received no offers. According to the Alberta government, “you are expected to bid on all parcels you request. If the parcel is not sold, a no-bid penalty of \$625 plus GST will be charged.”

The highest bonus in the subject area was \$1.17 million, paid by Scott Land & Lease Ltd. for a 3,840-hectare lease, which included all rights. The broker acquired sections 16, 20 to 22, 27, 28, 31 and 32 at 23-08W4, sections 24, 25, 35 and 36 at 23-09W4 and sections one, two and 10 at 24-09W4.

Government spokesman Mike Feenstra said the province did not know what happened with the large number of no bids on parcels put up for auction.

“Companies put parcels up for a variety of business reasons, and any intel on the rationale is commercially sensitive and not shared with government,” he said.

NEW JOINT VENTURE ADVANCES NATURAL GAS FUELLING MARKET

Ferus Natural Gas Fuels and ENN Canada Corporation announced a joint venture on November 19 to construct, own and operate two liquefied natural gas (LNG) liquefaction plants in Canada.

The plants will be located in Vancouver and Edmonton to service the on-road trucking market as well as other high-horsepower applications including marine, rail, mining, and oil and gas exploration.

“The benefits of fuelling with natural gas are significant,” said Henry Cai, chief executive officer of ENN Canada. “Natural gas over diesel represents a 30–40 per cent cost savings to the end user and contributes up to a 25 per cent reduction in greenhouse gas emissions.”

The partnership brings together two major players in the North American natural gas fuelling market.

Ferus specializes in building and operating cryogenic and micro-LNG plants and distribution equipment, and ENN Canada, which is developing LNG refuelling infrastructure across the country, brings expertise in the construction and operation of LNG and liquefied-compressed natural gas stations and ►



provides assistance in acquiring and transitioning to natural gas vehicles.

“Lack of infrastructure is one of the major challenges associated with the development of the LNG fuelling market. In order for our customers to make the switch to natural gas, they need certainty of an uninterrupted supply of LNG to fuel their equipment,” said Dick Brown, president and chief executive officer of Ferus.

“These two LNG liquefaction plants, along with the specialized distribution equipment and planned retail fuelling stations, will ensure that supply, which in turn will promote and facilitate the widespread usage of LNG in western Canada.”

Both facilities will initially be built to produce 100,000 U.S. gallons per day of LNG, with the ability to expand as demand grows. Site selection will be determined within six months, and construction will be initiated immediately afterward. First production is expected early in 2016.

STUDY FINDS CANADIAN ENERGY PIPELINES CONTRIBUTE BILLIONS TO ECONOMY

The operation of crude oil, natural gas liquids and natural gas transmission pipelines last year added about \$8.8 billion to Canada’s gross domestic product (GDP) and generated about \$1.9 billion in labour income, says a new report.

Over the next 30 years, the total GDP contribution is conservatively estimated at \$130 billion, according to the study by Angevine Economic Consulting Ltd. and commissioned by the Canadian Energy Pipeline Association (CEPA).

Pipeline operations in 2012 also sustained an estimated 25,000 full-time

equivalent jobs in Canada, the study found. While about one-half of the jobs were in Alberta and Saskatchewan, other provinces also benefited considerably, especially Ontario, British Columbia and Quebec, it says.

“Canada’s energy pipelines are an overlooked source of economic prosperity,” said Brenda Kenny, president and chief executive officer of CEPA. “Not only do they add billions to our GDP, they’re also a source of high-income jobs for many thousands of Canadians,” she said.

“There’s a perception that only Alberta and their workers benefit from the energy industry as a whole and from pipelines in particular,” Kenny added. “This report clearly shows that the economic benefits of pipelines are spread across the entire country and contribute to the prosperity of all Canadians.”

The analysis was undertaken by consultant Gerry Angevine in collaboration with Rick DeWolf of R. DeWolf Consulting during the summer of 2013. In their work, they used the most recent (2009) Statistics Canada interregional input/output model.

SLIGHTLY FEWER WELLS EXPECTED FOR 2014

At its 2014 Canadian drilling outlook session held October 30, the Petroleum Services Association of Canada (PSAC) forecast a total of 10,800 wells drilled (rig released) across Canada for the coming year, a 1.5 per cent decrease compared to the expected final tally of 10,960 wells drilled for 2013.

On a provincial basis for 2014, PSAC estimates 6,555 wells to be drilled in Alberta, representing a decrease of

less than one per cent in the province compared to the forecast for 2013.

Manitoba is expected to see a 7.7 per cent drop in activity with 480 wells, while drilling activity in Saskatchewan is expected to fall by 3.5 per cent, with an estimated 3,196 wells to be drilled in the year ahead. British Columbia, on the other hand, is expected to see 550 wells drilled, 2.2 per cent higher than 2013.

PSAC is basing its 2014 forecast on average natural gas price of C\$3.50 per thousand cubic feet AECO and crude oil price of US\$95 per barrel West Texas Intermediate.

“We are slightly optimistic about gas prices toward the end of 2014; however, we expect little change in next year’s drilling levels for gas,” said Mark Salkeld, PSAC’s president and chief executive officer.

“But an even more significant factor affecting drilling activity across Canada is the widespread and growing use of technologies such as hydraulic fracturing and horizontal drilling—technologies that were once considered advanced innovations,” he added.

“Quite simply, large-scale use of these kinds of technologies is creating a trend to fewer wells overall. By maximizing our use of technology, industry can increase production from existing wells, access more and deeper zones, and restart production from wells that have been shut-in. This means we can maintain or even increase production while drilling fewer new wells. In fact, one well today can be the equivalent of two, three or more wells drilled just 10 years ago. That’s a game-changer for our industry.” ■

TECHNOLOGY

UPDATE



TRICAN ADDS CT SCANNER TO ROCK ANALYSES REPERTOIRE

Calgary-based Trican Geological Solutions Ltd. has added an enhanced computerized imaging instrument to the company's core analytical capacity.

The CT scanner provides tomographic, or sliced, images of core samples or sections and provides clients with 3-D visualization and quantification of pores, fluids (oil and gas) and fractures within cores, the company said. CT data offers an independent means of determining porosity and density and can be used for well log calibration.

"We're excited to offer this new technology to our customers," said Cory Twemlow, laboratory manager. "CT scans of core material from our last caprock study provided new means to properly sample for geomechanic tests and rock-integrity evaluation. In carbonate rocks, we can even run acid tests and determine wormholing issues. This is great news for the industry that wants to be leading the pack."

The CT scanner is located at Trican's new laboratory in Calgary, together with the new private core-viewing facility and other state-of-the-art equipment including petrographic microscopes. The company said integration of high-tech equipment with new procedures for unconventional resource evaluation helps customers better understand and evaluate oil and gas resources around the world.

ALBERTA-FINLAND COLLABORATION TO IMPROVE WATER TREATMENT IN PETROLEUM INDUSTRY

Alberta-based Fluid Clarification Inc. is partnering with Finland's Sofi Filtration to improve water cleaning in the petroleum sector's industrial processes.

The collaboration began this fall and results are expected by July 2015.

Sofi Filtration, a leader in industrial water cleaning, has developed a revolutionary product capable of cleaning high volumes of process water, filtering out the smallest particles. More efficient and cost effective than traditional filtration methods, the technology leaves a small environmental footprint and is available at a lower cost.

"This project is a unique opportunity for our business," said Arthur Potts, P.Eng., president of Fluid Clarification. "We are working with Sofi Filtration to test and adapt their filter for oil and gas, as well as oil sands applications. If we

are successful, we'll be able to bring an exciting product to new markets."

Fluid Clarification provides advanced fluid separation technology to industry. Founded in 1992, the company has three offices in Alberta, including its head office in Calgary.

"Adapting the existing technology to Alberta's petroleum industries has strong potential to help companies lower operational costs, reduce disposal volumes and improve productivity," the two companies said in a news release.

Fluid Clarification and Sofi Filtration met in Finland last year through a mission led by Alberta Innovates – Technology Futures.

The collaboration is the first project awarded through the new [Alberta-Finland Innovation and Commercialization Program](#). The program aims to enhance commercialization activities between Alberta and Finland. By granting joint funding to small- and medium-sized Alberta enterprises that collaborate with Finnish companies, the program supports projects that promote innovation and commercialization in advanced materials, instrumentation and sensors, health, information and communication technology, and clean technologies.

NEWALTA AND DUPONT COLLABORATE ON WATER-PROCESSING TECHNOLOGY

Newalta Corp. and DuPont Canada have signed a development agreement to test an innovative water-processing technology in Alberta's oil and gas industry.

"Fresh water is a critical issue in the oil and gas industry, and we are collaborating with DuPont Canada to find the most creative environmental solutions we can for our customers," said Doug Pecharsky, Newalta's senior vice-president of new markets. "The water-processing technology removes solids from water and facilitates a higher level of water reuse for customers at their sites."

The companies said their collaboration will combine DuPont's innovative scientific and technical expertise with Newalta's operating capabilities and customer relationships.

"Collaborating with Newalta gives us an opportunity to rapidly demonstrate technologies in an operating environment where we expect to make a significant difference in the recovery and reuse of valuable water resources," said Basil El-Borno, business manager of oil and gas for DuPont Canada. ■

LABOUR

UPDATE



LABOUR MARKET INFORMATION

Alberta's seasonally adjusted unemployment rate was 4.4 per cent in October 2013, down 0.4 percentage points from August and unchanged from the same month last year. This rate was the second lowest in Canada, behind Saskatchewan's 3.6 per cent. The national rate was 6.9 per cent, unchanged from the previous month.

Alberta continues to lead the nation in economic growth thanks largely to investment in oil sands projects. The province led quarterly employment growth across Canada, gaining 33,800 jobs on a seasonally adjusted basis. What's more, the province hasn't seen employment growth in this range since 2011. On a year-over-year basis, employment grew by 3.5 per cent or 74,400 jobs from 2012, whereas national job creation was up by a modest 1.3 per cent.

An influx of new migrants has added to the supply of labour in the province and prevented the unemployment rate from falling significantly during a period of robust job growth. In four of the last five months, employment has jumped by more than 14,000 per month.

Yet, this surge in job growth has been closely matched by entry into the labour force, as growing numbers of people look for work. As a result, despite strong monthly job gains, the unemployment rate has stayed within the 4.2 per cent to five per cent range since last spring.

GET THE WORKERS YOU NEED: PLAN, RECRUIT, TRAIN AND KNOW

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- Hiring in Alberta
- Changes and updates to immigration programs
- Foreign qualification recognition
- Retaining your employees through the Alberta Immigrant Nominee Program, and more

Click [here](#) to learn more and subscribe.

CHANGES TO THE ALBERTA IMMIGRANT NOMINEE PROGRAM

The Alberta Immigrant Nominee Program (AINP) has made an important change to the eligibility criteria of the Strategic Recruitment Stream – Post-Graduate Worker Category. Effective immediately, only applicants who have completed an eligible program of study in Alberta may apply under this category.

See the [Post-Graduate Worker Category](#) page for details.

CHANGES TO THE CANADIAN EXPERIENCE CLASS

Citizenship and Immigration Canada implemented several changes to the Canadian Experience Class (CEC). As part of the changes, an annual cap on the number of new CEC applications and several sub-caps specific to certain occupations have been introduced.

See the [Citizenship and Immigration Canada news page](#) for more information.

INTERNATIONAL MARKET FACT SHEETS

Are you recruiting internationally but have no idea where to start? Recruiting fact sheets for the [United States](#) and [Ireland](#) provide information on the labour supply, migration trends, credential recognition and recruitment tips to help you make informed recruitment decisions.

CONTACT US

If you have questions, concerns or require more information, contact us at ABWorkforceinfo@gov.ab.ca. ■





Oil and gas statistics

DRILLING RIG COUNT BY PROVINCE/TERRITORY

Western Canada, Nov. 26, 2013

	ACTIVE	DOWN	TOTAL	ACTIVE (Per cent of total)
Western Canada				
Alberta	264	304	568	46%
British Columbia	62	15	77	81%
Manitoba	10	11	21	48%
Saskatchewan	87	62	149	58%
WC Total	423	392	815	52%

Source: JuneWarren-Nickle's Energy Group

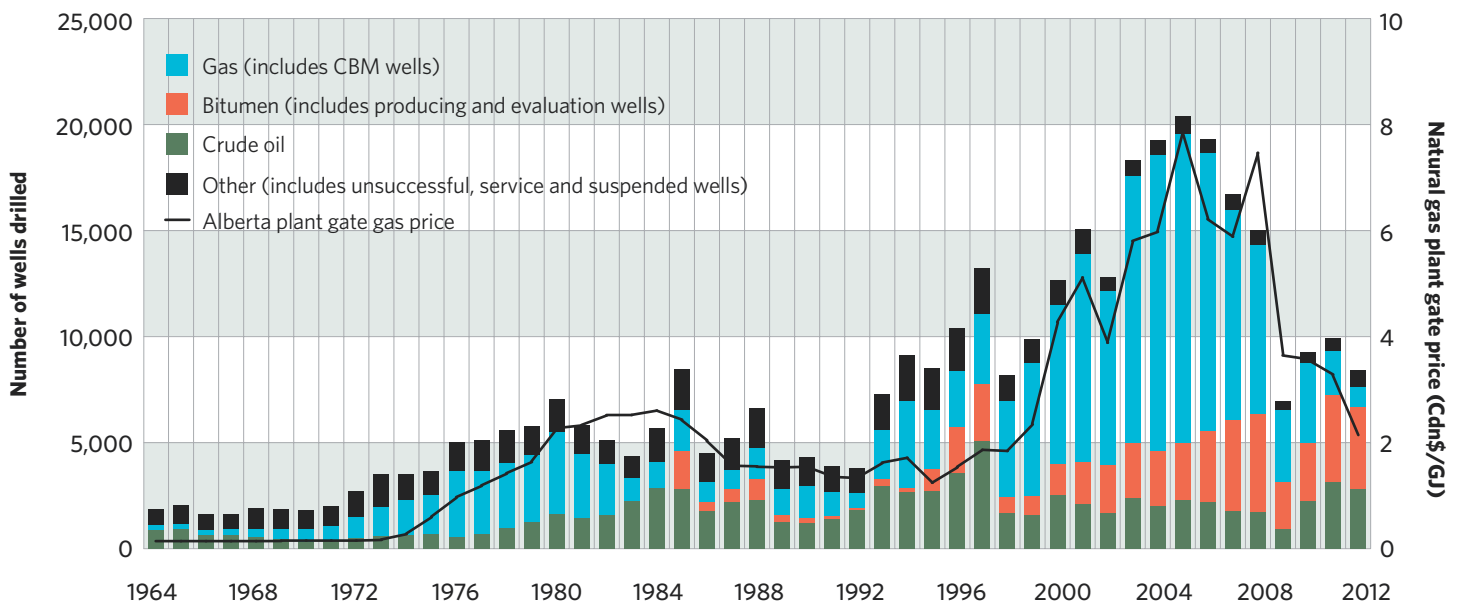
OIL & GAS WELL COMPLETIONS BY PROVINCE/TERRITORY

Western Canada, November 2013

Western Canada	OIL WELLS		GAS WELLS	
	November 2012	November 2013	November 2012	November 2013
Alberta	533	463	137	164
British Columbia	1	4	75	54
Manitoba	48	46	0	0
Saskatchewan	344	339	3	0
Total	926	852	215	218

Source: JuneWarren-Nickle's Energy Group

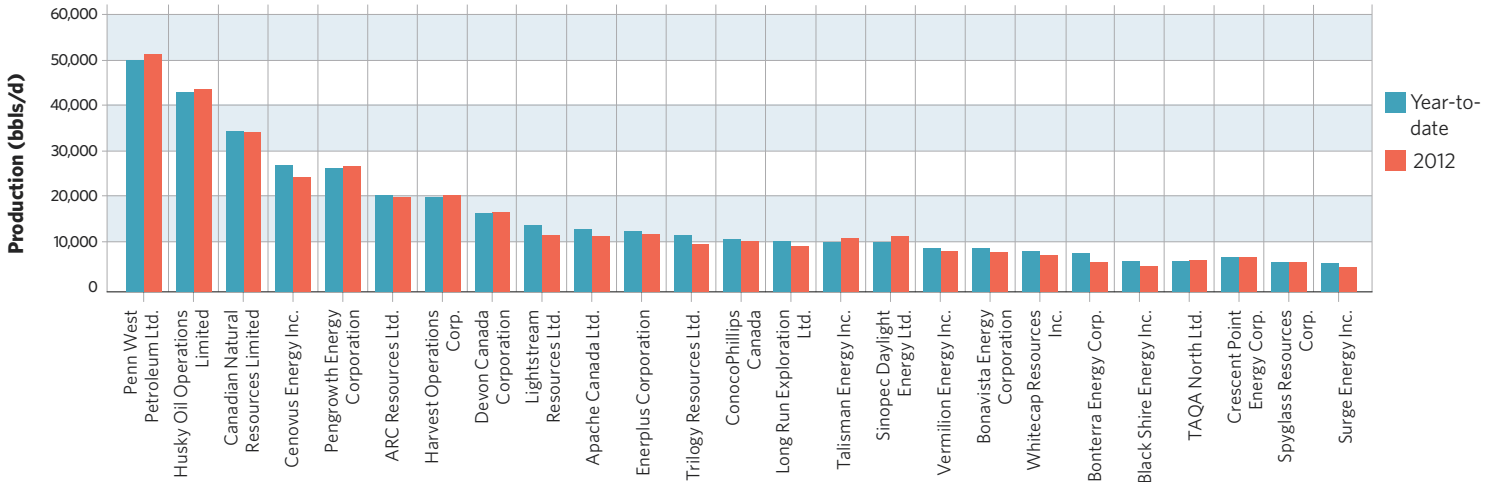
DRILLING ACTIVITY IN ALBERTA, 1964 - 2012



Source: Alberta Energy Regulator

For a glossary of oil and gas terms and other industry information, go to the *Daily Oil Bulletin* toolkit:
<http://www.dailyoilbulletin.com/common/toolkit.asp>

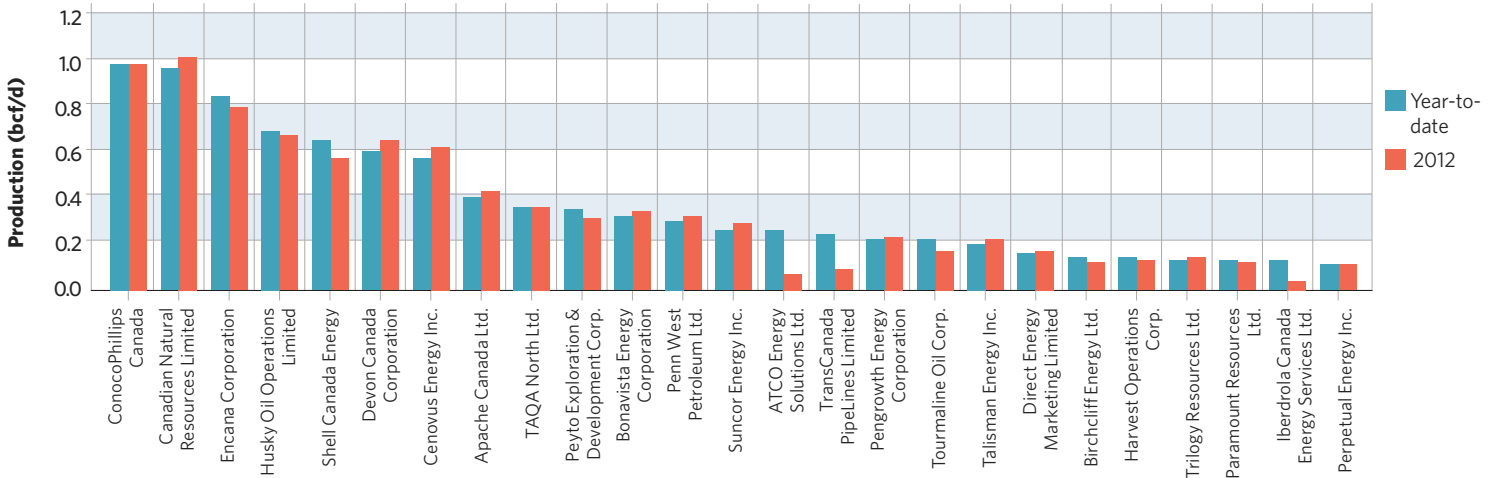
TOP 25 OIL PRODUCERS IN ALBERTA (AS OF JUNE 2013)



Source: Alberta Energy Regulator

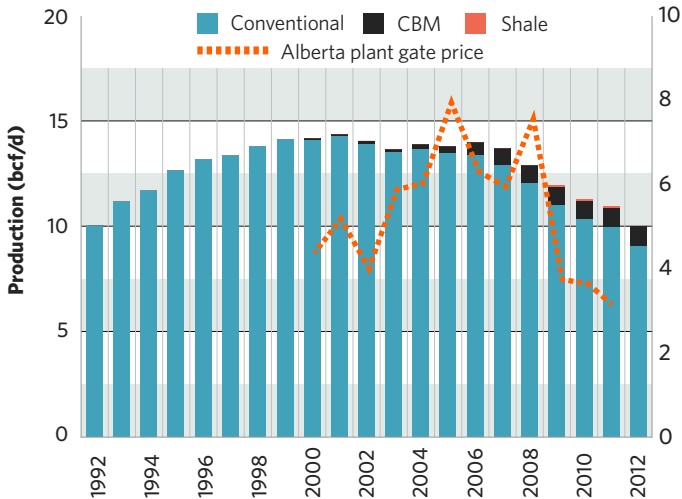
TOP 25 GAS PRODUCERS IN ALBERTA (AS OF JUNE 2013)

Only gas production reported from oil and gas batteries, gas gathering systems and gas plants is considered. Bitumen facilities, straddle plants and fractionation plants are excluded, as is gas from commercial gas storage schemes.



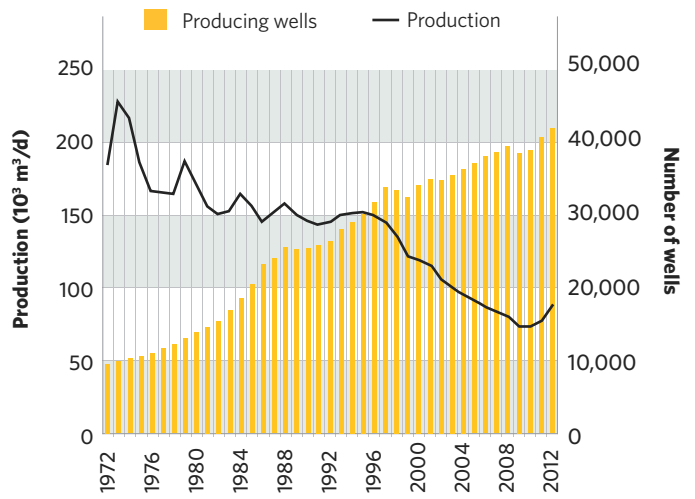
Source: Alberta Energy Regulator

ALBERTA MARKETABLE GAS PRODUCTION



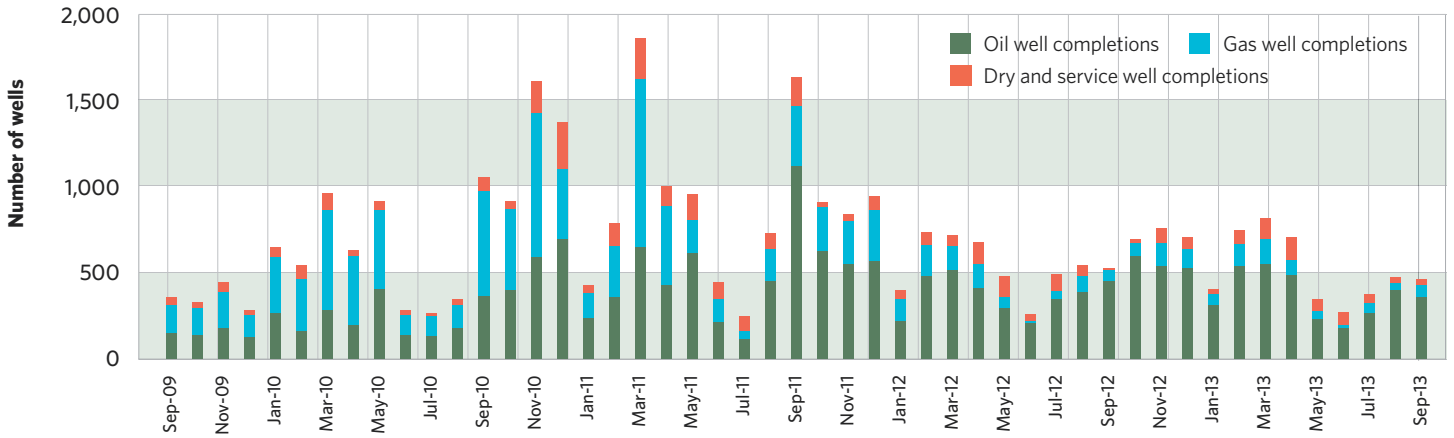
Source: Alberta Energy Regulator

ALBERTA CRUDE OIL PRODUCTION AND PRODUCING WELLS



Source: Alberta Energy Regulator

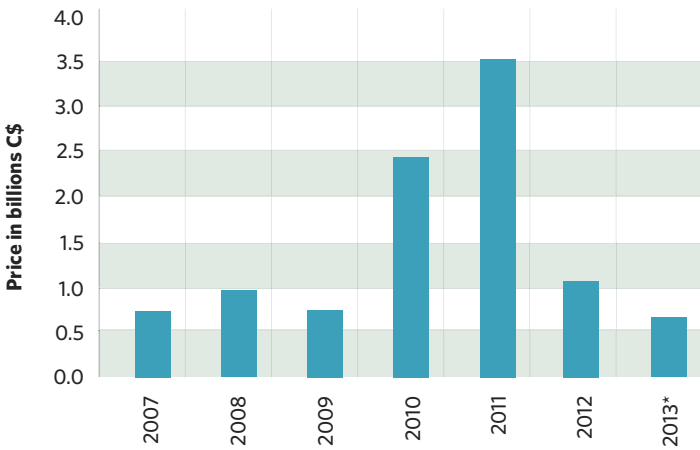
ALBERTA WELL COMPLETIONS



Source: JuneWarren-Nickle's Energy Group

ALBERTA CROWN LAND SALES

P&NG rights, excluding oil sands



Source: Alberta Energy Regulator

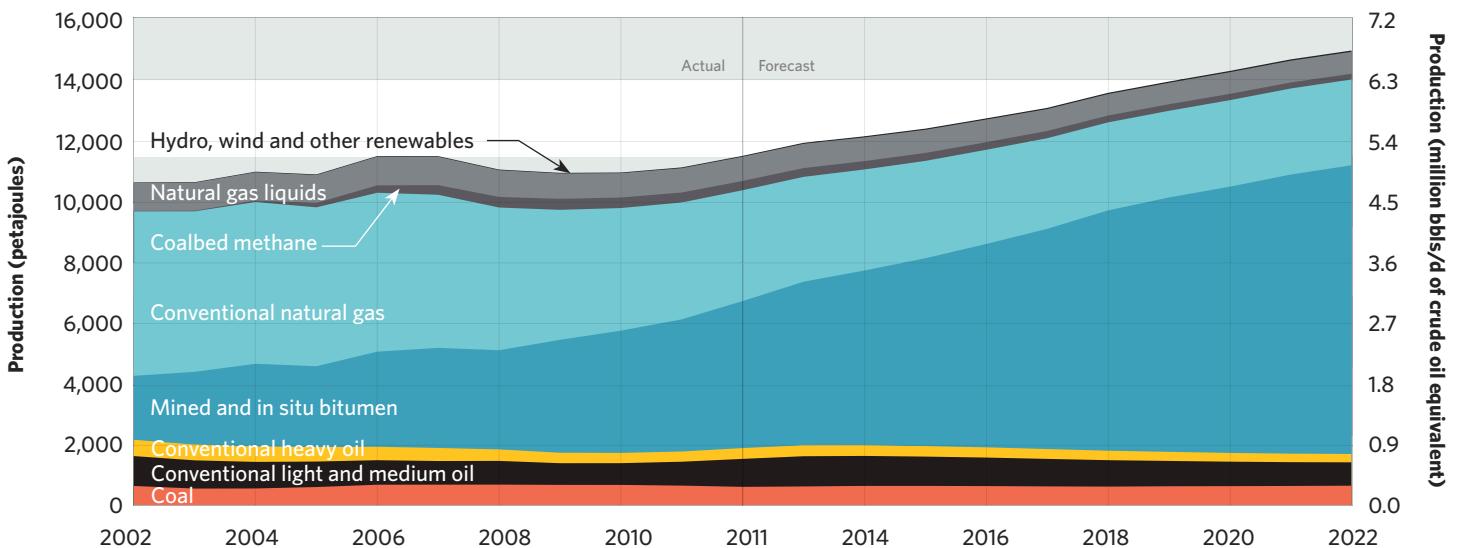
*\$674.74 million (as of Nov. 20, 2013)

WELL DEPTHS

	GAS			OIL		
	Total metres	Wells drilled	Avg. well depth (m)	Total metres	Wells drilled	Avg. well depth (m)
2008	12,301,283	9,937	1,238	8,873,082	5,824	1,524
2009	6,643,169	4,195	1,584	5,448,469	3,573	1,525
2010	8,512,677	4,565	1,865	10,981,246	6,709	1,637
2011	7,251,446	2,799	2,591	15,390,096	8,892	1,731
2012	5,009,578	1,487	3,369	15,891,329	8,501	1,869

Source: JuneWarren-Nickle's Energy Group

TOTAL PRIMARY ENERGY PRODUCTION IN ALBERTA



Source: Alberta Energy Regulator



Promising tight oil plays

Alberta's crude oil potential was once thought to be declining—but not anymore. With technological advancements, both conventional fields and new oil-laden fields that were thought to be uncommercial with pre-existing vertical drilling technology are now the hot crude plays in the province. Here's a look at some of the more promising tight oil plays that have been unlocked via horizontal drilling and multistage fracturing technology.

≡ DRAINING THE CARDIUM

Coaxing crude oil out of the ground from the Cardium formation underlying the Pembina oilfield has always been a matter of brute force.

The Pembina #1 discovery well, drilled by Socony-Mobil in the winter of 1953, required a fracture treatment consisting of diesel fuel and 3,000 pounds of sand pumped at 1,800

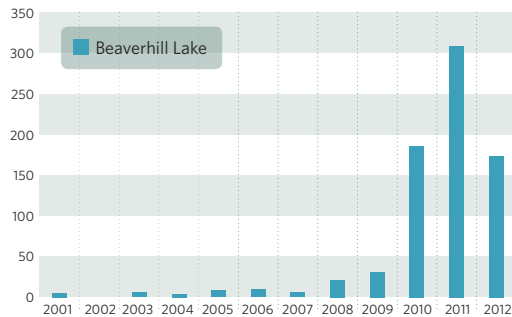
pounds per square inch of pressure to get oil flowing to the wellbore in commercial quantities.

Almost 60 years later, oil explorers are still at it, cracking sandstone as deep as 9,400 feet beneath the surface in the hopes of striking pay. Only now the wells drilled are horizontal and stretch as far as a mile through the reservoir. Massive fracture treatments consist of 20 tons of sand—more than 12 times as much as was pumped downhole in the Pembina #1—mixed with specialized fluids. And as many as 20 stages are fracture stimulated one after another along the horizontal leg using on average 10,000 horsepower of pumping might.

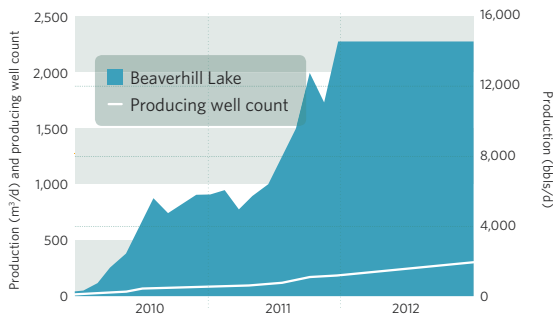
The size of the prize is huge. The Alberta Energy Regulator says the Cardium had 10 billion barrels of original oil in place with around 1.7 billion barrels produced. However, those numbers were derived from

BEAVERHILL LAKE

HORIZONTAL WELL LICENCES

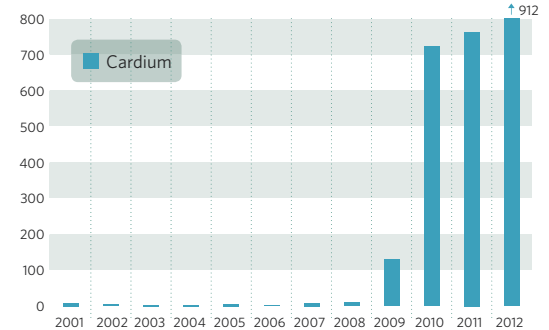


TIGHT OIL PRODUCTION

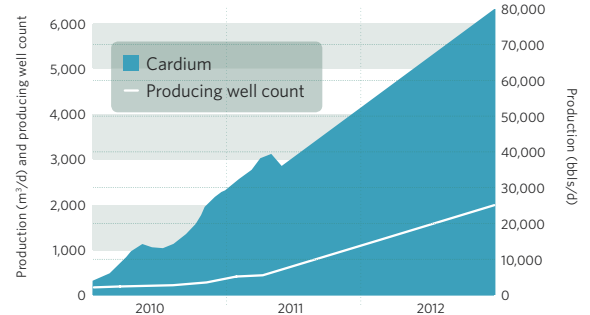


CARDIUM

HORIZONTAL WELL LICENCES



TIGHT OIL PRODUCTION



historical records from vertical drilling in the play. Estimates now suggest the Cardium could contain as much as 15 billion barrels of oil, and expect 20–30 per cent of that oil could ultimately be recovered.

RETURN TO SWAN HILLS

The Beaverhill Lake carbonate play in the Swan Hills north of Edmonton is another hot tight oil play in central Alberta. Home Oil Company originally discovered the North Swan Hills field in 1956. Amoco Corporation and Gulf Oil Corporation discovered the South Swan Hills unit in 1959. Combined, the two fields had around four billion barrels of oil in place.

Producers are using a 14-stage fracture stimulation program with a retrievable multi-fracturing tool that allows full wellbore access later if needed. More and more acid is being pumped in each fracture stage to open up more reservoir. Operators are now injecting as much as 1,200 cubic metres of acid per stage. The acid treatment is custom designed for the formation rock. Jet pumps are being used to enhance cleanup after the fracture stimulation to mitigate any formation damage, and multi-well pads are being used to cut costs and environmental footprints.

PIERCING THE VIKING

Another major play taking shape in central Alberta is in the Colorado Group, in the eastern reaches of the province.

The Viking oil play at Halkirk and Redwater has mainly entered development mode while in other areas it remains in exploration mode. Given the strength of oil prices in this market, the Viking will be targeted by more and more operators providing new well data and evolving the play in the province.

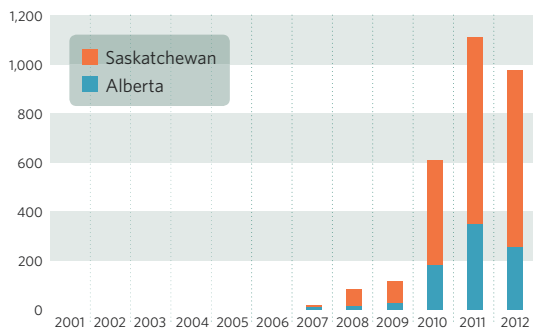
In 2012, WestFire Energy Ltd., which in October 2012 amalgamated with Guide Exploration Ltd. to become Long Run Exploration Ltd., has been the premier Viking player in Alberta. At Redwater, WestFire holds 62 net sections of land. In 2012, the company's Viking wells achieved marked improvement in initial production rates, thanks to its modified completion methods.

Penn West Petroleum also has a significant position in the Viking oil play. On the Alberta side, production results from the gassy-oil wells drilled in 2012 continue to be encouraging, reports the company. During the year, the company expanded its gas-handling infrastructure to support its active 2013 drilling programs.

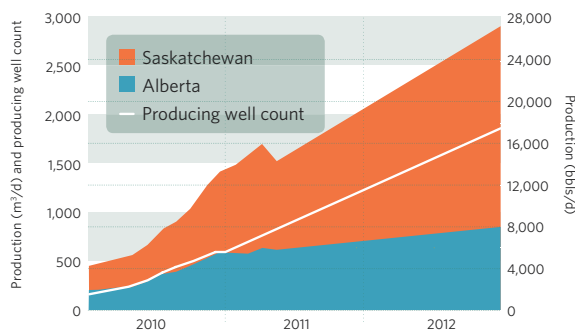
Novus Energy Inc. recognizes the vast potential of the Viking, and the company recently amassed 46 net sections of Crown lands prospective for Viking oil in the Provost area of Alberta. Novus believes the assembled acreage meaningfully increases the company's future drilling and development inventory. Drilling on these lands is planned for early 2013. ■

VIKING

HORIZONTAL WELL LICENCES

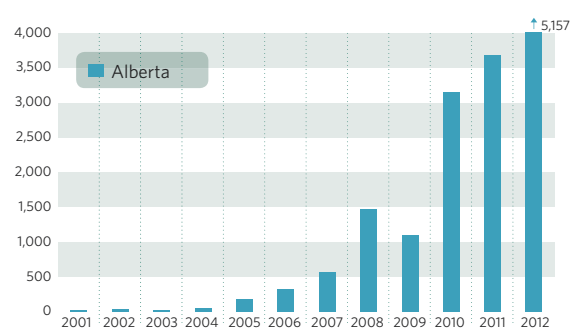


TIGHT OIL PRODUCTION

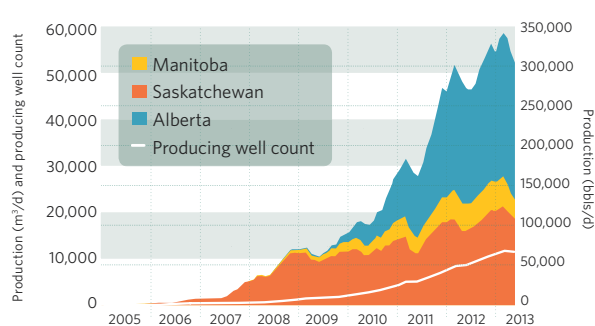


ALBERTA OVERVIEW

HORIZONTAL WELL LICENCES



TIGHT OIL PRODUCTION



MOST ACTIVE COMPANIES 2012

BEAVERHILL LAKE

1. Pinecrest Energy Inc.
2. Penn West Petroleum Ltd.
3. Lone Pine Resources Canada Ltd.
4. Second Wave Petroleum Inc.
5. Shell Canada Limited
6. Surge Energy Inc.
7. Dolomite Energy Inc.
8. Border Petroleum Corp.
9. Encana Corporation
10. Mancal Energy Inc.

CARDIUM

1. PetroBakken Energy Ltd.
2. Vermilion Energy Inc.
3. Sinopec Daylight Energy Ltd.
4. Whitecap Resources Inc.
5. Spartan Oil Corp.
6. Bellatrix Exploration Ltd.
7. Penn West Petroleum Ltd.
8. ARC Resources Ltd.
9. Pengrowth Energy Corporation
10. Angle Energy Inc.

VIKING

1. Teine Energy Ltd.
2. Penn West Petroleum Ltd.
3. Polar Star Canadian Oil and Gas Inc.
4. Novus Energy Inc.
5. Raging River Exploration Inc.
6. Whitecap Resources Inc.
7. Pengrowth Energy Corporation
8. Crescent Point Energy Corp.
9. Renegade Petroleum Ltd.
10. Outpick Energy Inc.

CONTACTS

Industry Associations

- Alberta Land Surveyors' Association www.alsa.ab.ca
- Canadian Association of Geophysical Contractors www.cagc.ca
- Canadian Association of Oilwell Drilling Contractors www.caodc.ca
- Canadian Association of Petroleum Producers www.capp.ca
- Canadian Energy Pipeline Association www.cepa.com
- Canadian Gas Association www.cga.ca
- Canadian Natural Gas www.canadiannaturalgas.ca
- Canadian Natural Gas Vehicle Alliance www.cngva.org
- Canadian Society of Exploration Geophysicists www.cseg.ca
- Canadian Society of Petroleum Engineers www.speca.ca
- Canadian Society for Unconventional Resources www.csur.com
- Gas Processing Association Canada www.gpacanada.com
- Petroleum Services Association of Canada www.psac.ca
- Petroleum Technology Alliance Canada www.ptac.org
- Explorers and Producers Association of Canada www.explorersandproducers.ca

Alberta Government

- Alberta Energy www.energy.gov.ab.ca
- Alberta Environment and Sustainable Resource Development www.srd.alberta.ca
- Alberta Innovation and Advanced Education www.eae.alberta.ca
- Alberta Energy Regulator www.aer.ca
- Alberta Innovates www.albertainnovates.ca
- Alberta Geological Survey www.ags.gov.ab.ca
- Alberta Surface Rights Board www.surfacerights.gov.ab.ca

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