



Alberta Oil & Gas Quarterly

Spring 2019

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NEXT ISSUE

Alberta's Growing Petrochemicals Industry in Focus

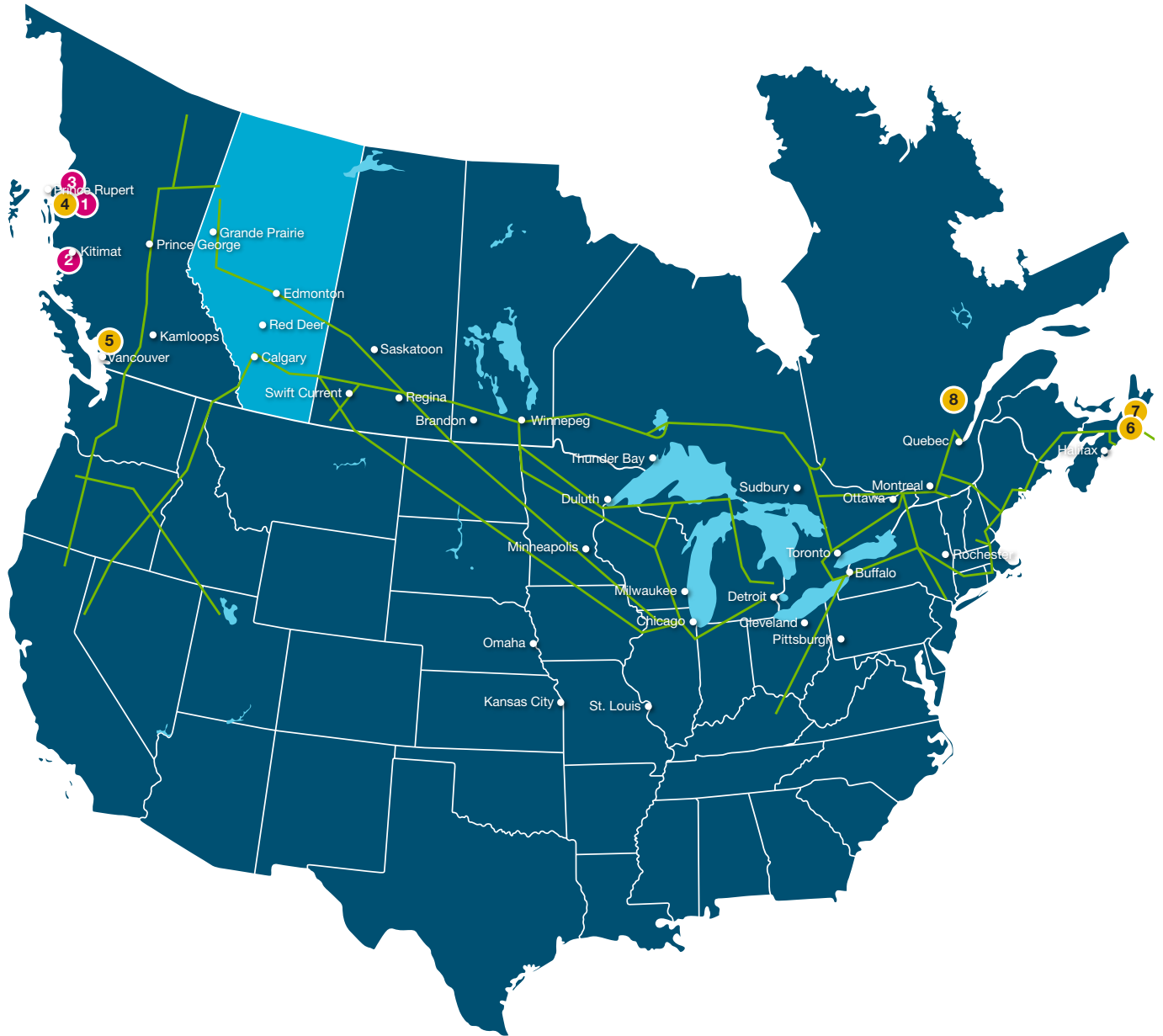
Cover Photo: Seven Generations Energy
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Connected to North America's Critical Infrastructure: Oil



- | | | | |
|----------------------|----------------|-----------------|--------------------------|
| CP Rail | Trans Mountain | TCPL Keystone | Gulf Coast Project |
| CN Rail | Rangeland | Alberta Clipper | Seaway |
| Oil Pipelines | Milk River | Enbridge | Portland P/L |
| In Service | Bow River | Spearhead | Trans Mountain Expansion |
| Proposed | Express Platte | ExxonMobil USGC | Keystone XL Northern Leg |

Connected to North America's Critical Infrastructure: Natural Gas



 Natural Gas Pipelines	West Coast Exports <i>Under Construction/Operational</i>		<i>Proposed</i>		East Coast Exports <i>Proposed</i>	
	1 Ridley Island Export Terminal	4 Kitimat LNG	6 Goldboro LNG	7 Bear Head LNG	8 Energie Saguenay	
	2 LNG Canada	5 Woodfibre LNG				
	3 Prince Rupert Propane Export Terminal					

Crude Oil Plays

Oilsands Upgraders

Operating

- 1** Suncor Base & Millennium
- 2** Syncrude Mildred Lake
- 3** Athabasca Oil Sands Project Scotford
- 4** Canadian Natural Resources Horizon

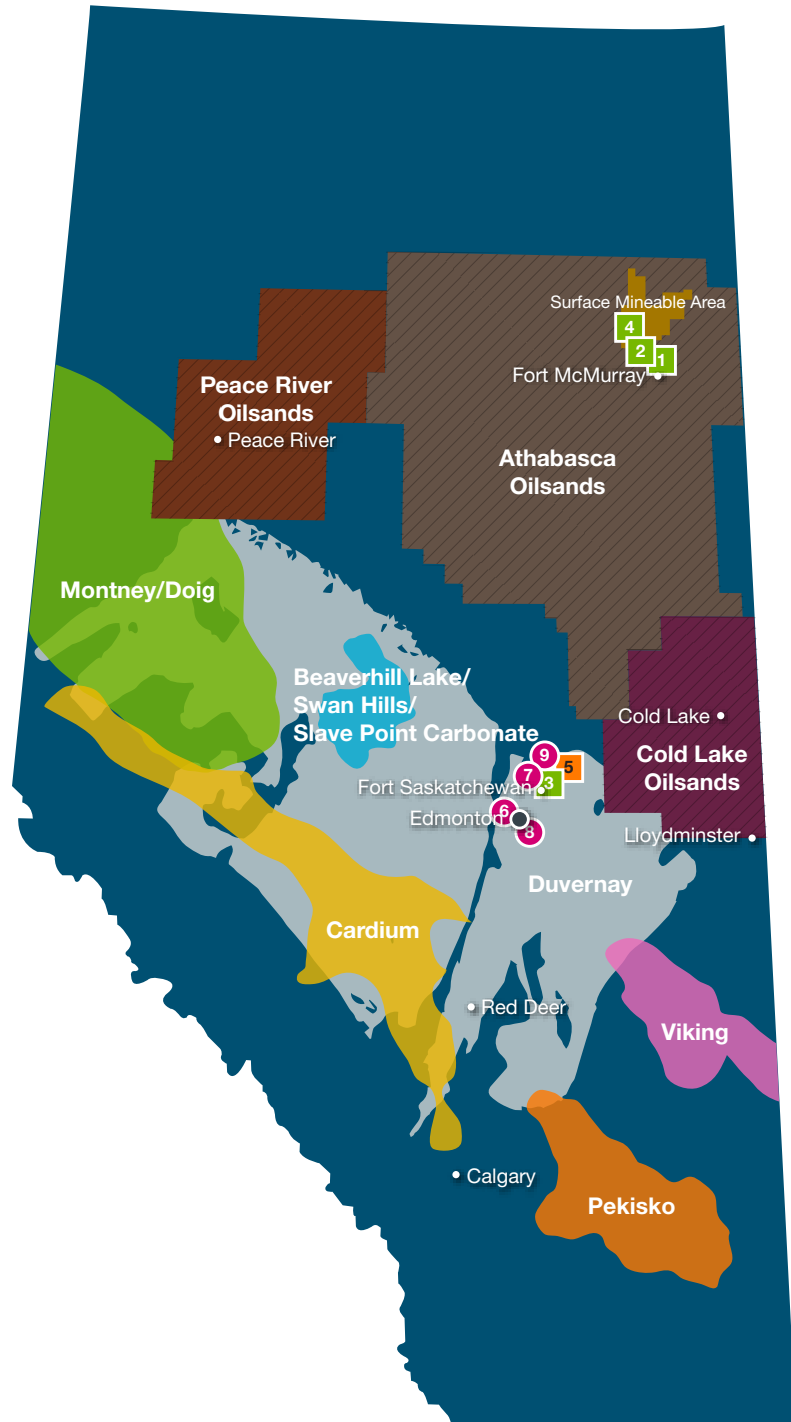
Proposed

- 5** Value Creation Heartland

Oil Refineries

Operating

- 6** Suncor Edmonton
- 7** Shell Scotford
- 8** Imperial Strathcona
- 9** North West Redwater Sturgeon



Natural Gas Plays

Straddle Plants

- 1 AltaGas Ellerslie
- 2 Inter Pipeline Cochrane
- 3 Alta Gas Joffre
- 4 Spectra Empress
- 5 Plains Midstream Empress
- 6 Atco Empress
- 7 1195714 Alberta Empress
- 8 Atco Fort Saskatchewan

Fractionators

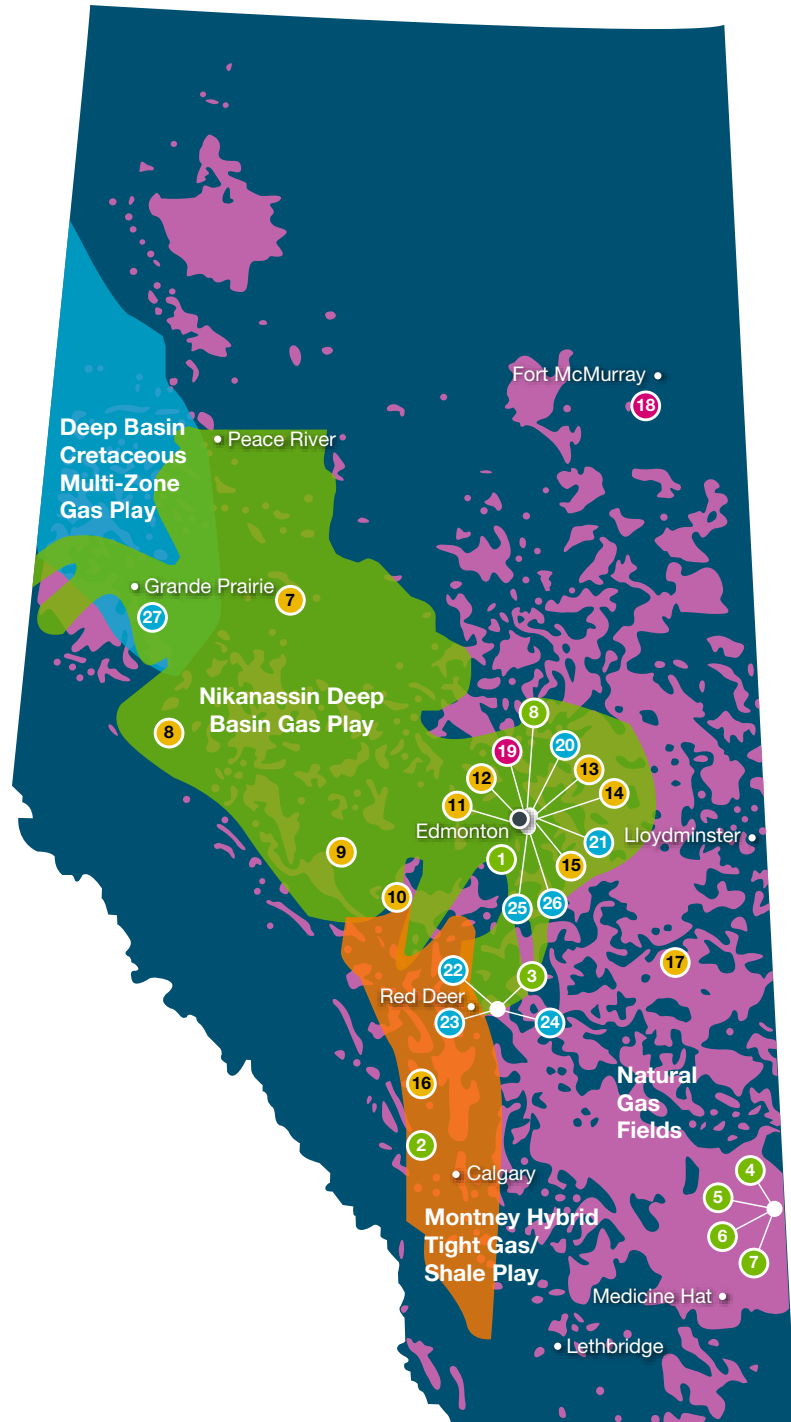
- 7 High Prairie Frac Plant
- 8 Kanata Simonette 13-11 Gas Plant
- 9 Tervita Granada Frac Plant
- 10 Buck Creek Frac Plant
- 11 DOW Fort Sask
- 12 Fort Sask Gas Plant
- 13 Keyera Fort Sask Frac Plant
- 14 Interpipeline ROF Facility
- 15 Pembina INFRA. & Logistics LP FRAC 1, 2 & 3
- 16 Harmattan Fractionation
- 17 Gibson Hardisty

Offgas Plants

- 18 Inter Pipeline Fort McMurray
- 19 Heartland Offgas Delivery (4917)

Petrochemical Facilities

- 20 Pembina PDH/PP (Under Construction)
- 21 Fort Sask: DOW
- 22 Joffre E1: NOVA
- 23 Joffre E2: NOVA
- 24 Joffre E3: DOW/NOVA
- 25 Inter Pipeline Heartland Petrochemical Complex (Under Construction)
- 26 Inter Pipeline Acrylic Acid & Derivatives Project (Proposed)
- 27 Nauticol Energy Methanol Facility (Proposed)



Upstream News

► Production at Suncor Energy's new Fort Hills oilsands project continued to surge at the end of 2018, according to the most recent data from the Alberta Energy Regulator.

The 190,000-bbl/d mining project averaged 208,070 bbls/d in December, its highest rate since officially coming online in January 2018.

Overall mined oilsands production was 1.698 million bbls/d in December 2018, down from 1.805 million bbls/d in November 2018 but up from 1.447 million bbls/d in December 2017.

AER data for in situ projects, which is more current, shows total production at 1.524 million bbls/d in February, up from 1.460 million bbls/d in January.

► Canada's largest condensate producer has achieved a new production milestone.

Seven Generations Energy's

annual average exceeded 200,000 boe/d for the first time in 2018.

The company, which was formed in 2008 and went public in 2015, focuses its operations on Alberta's liquids-rich Montney play.

Seven Generations produced an average of 202,600 boe/d in 2018, up from 175,000 boe/d in 2017. Production was 215,100 boe/d in Q4/2018, comprised 60 percent of natural gas liquids.

► Obsidian Energy says it is experiencing continued success in Alberta's Cardium play.

After proving the viability of a quick-cycle light oil primary production campaign in early 2018, the company began a dedicated execution program starting in July 2018, carried through to breakup in March 2019.

The company said the wells, which have been completed and are on production, continue to perform as

expected, demonstrating the repeatability of the development style as it drills the first of several core Cardium areas.

The average drill, complete, equip and tie-in costs of all 19 wells came in at \$3.8 million per well and without any safety or environmental incidents.

► Imperial Oil has delayed by at least one year the completion of its \$2.6-billion Aspen oilsands project, which it sanctioned in November 2018.

The 75,000-bbl/d Aspen project is the first greenfield oilsands project to be sanctioned since Suncor Energy Inc.'s Fort Hills project in October 2013.

It is expected to be the industry's first commercial deployment of solvent-assisted thermal technology, which is designed to decrease costs and environmental footprint while improving recovery.



Image: Encana

Midstream News

▶ The LNG Canada project owners are officially handing over construction management to their prime contractor, JGC Fluor, the project announced in April.

Japan's JGC Corporation and Texas-based Fluor were awarded the engineering, procurement and construction contract for the project in April 2018.

Their crews mobilized to the site in November following the positive final investment decision by LNG Canada partners Shell, PETRONAS, PetroChina, Mitsubishi and KOGAS.

The project is expected to start operating in 2024/2025.

▶ Canada's first terminal exporting propane off the West Coast is now in operations.

AltaGas shipped the first cargo from its new Ridley Island Propane Export Terminal on May 23, 2019.

The company has a multi-year deal with Japan-based

Astomos Energy to purchase 50 percent of its propane.

The terminal has a locational advantage, AltaGas says, given very short shipping distances to markets in Asia, notably a 10-day shipping time compared to 25 days from the U.S. Gulf Coast.

▶ Pacific Oil and Gas, owner of the proposed Woodfibre LNG project, is acquiring privately-held natural gas producer Canbriam Energy and its Montney assets.

The \$1.8 billion Woodfibre LNG project, located southwest of Squamish, B.C., is licensed to export 2.1 million tonnes of LNG per year for 40 years but has not been officially sanctioned for construction.

▶ Chevron Canada applied to the National Energy Board in April for a new export license that would nearly double the size of the proposed Kitimat LNG project.

The company asked for approval to increase capacity from 10 million to 18 million tonnes per year, with commissioning of the facility anticipated by 2029.

The existing export license expires in 2019.

▶ Sugar Land, Texas-based Rangeland Energy will build a new 50,000 bbl/d pipeline system connecting Alberta's emerging Marten Hills oil play to markets in the Edmonton region.

▶ Gibson Energy is continuing the rapid build-out of crude oil storage capacity at its Hardisty Terminal, proceeding with 500,000 barrels of additional tankage.

This brings the total up to 3.6 million barrels of new capacity announced over the last 18 months. Gibson said that it successfully placed the first phase of this development into service ahead of schedule in mid-February 2019.



Image: Pembina Pipeline Corp.

Downstream News

▶ Canada Kuwait Petrochemical Corporation, a joint venture of Pembina Pipeline Corp. and Petrochemical Industries Company K.S.C. of Kuwait, is proceeding with a \$4.5-billion integrated propane dehydrogenation and polypropylene (PDH/PP) plant in Alberta's Industrial Heartland.

Pembina is now obtaining engineering, procurement and construction bids, site clearing activities and the placement of long-lead equipment orders.

The project has been awarded up to \$300 million of royalty credits from the Alberta government through its Petrochemicals Diversification Program Round 1.

The PDH/PP Facility is expected to be in service in 2023.

▶ Two proposed petrochemical projects have been awarded funding through Round 2 of Alberta's

Petrochemicals Diversification Program.

In February, the Government of Alberta committed up to \$80 million in royalty credits to Nauticol Energy for the first phase of its planned methanol plant in Grande Prairie, which has an estimated capital cost of \$800 million.

In March, Inter Pipeline was awarded up to \$70 million in royalty credits for a proposed acrylic acid and propylene derivatives facility near Edmonton. Inter Pipeline said the project is in the conceptual stage, and is expected to have a capital cost of \$600 million.

▶ North West Redwater Partnership is now targeting full commercial operation of the Sturgeon Refinery by the end of 2019.

The project has been processing oilsands synthetic crude into low sulphur diesel since December 2017. Its designed switch to bitumen feedstock was expected

in mid-2018 but has been delayed by challenges with the critical gasifier unit, NWR said in mid-May.

NWR said the gasifier's reactor burners have been redesigned and are ready for final testing, and the focus is now on repairing damaged piping.

▶ A massive vessel that set Alberta road move records in early 2019 was lifted into place in late March at Inter Pipeline's Heartland Petrochemical Complex near Edmonton.

The propylene-propane splitter was installed using one of the largest cranes in the world, a 430-foot, 1,600-tonne Mammoet ring crane. The splitter weighs over 800 tonnes and is approximately the length of a CFL football field.

The vessel was heaviest-ever load on Alberta highways when it was transported from the Dacro Industries shop to the site in January 2019.





Cover Feature

The heaviest vessel to ever travel Alberta roadways, an over-800 tonne propylene-propane splitter, is delivered to Inter Pipeline's Heartland Petrochemical Complex in January 2019.

Photo: Inter Pipeline Ltd.

Alberta's opportunity in the new natural gas economy

With its vast resources and skilled developers, Alberta has tremendous opportunity to benefit as global natural gas demand is expected to surge in the coming decades and domestic markets diversify.

Often praised as the clean energy source of the future, natural gas or super-cooled LNG could be the answer to significantly reducing global emissions while displacing high-carbon energy sources, in addition to its critical position in increasing petrochemical processing.

The International Energy Agency (IEA) forecasts that global natural gas demand will increase by 46 percent by 2040, primarily as Asian markets switch off coal.

The Chinese government has said that “natural gas is not the bridge fuel - it is the fuel.”

The robust global outlook is welcome news for Alberta and British Columbia, where the industry is facing “a daunting crisis.” That's the

language used by the Alberta government's Natural Gas Advisory Panel in late 2018.

Right now Alberta and B.C. serve only domestic and U.S. markets, which are oversupplied as a result of huge increases in U.S. production. A lack of spare capacity to supply these markets and “enormous regulatory uncertainty and delay” for new pipeline projects has contributed to “crushingly low” revenues for producers and government, the panel said.

But the market is changing, and the natural gas industry in Alberta and B.C. is getting closer to realizing its potential on the global stage.

CIBC analyst Jon Morrison said that despite the lingering low price environment, there are positive developments in Canada's natural gas market that have “potential to return material capital flows” to the sector.

“Specifically, the LNG Canada project reached

a positive final investment decision, and we expect the Pieridae-led Goldboro LNG project [in Nova Scotia] to likely follow suit in the coming months,” he said in November 2018.

He also cited petrochemical project development, which is encouraging in Western Canada “given the ample natural gas liquids supply and low natural gas prices.”

As such, Morrison believes there are “reasons for optimism in the Canadian natural gas markets” in the longer term and that these developments will generate multiple market opportunities across the construction, pipeline and upstream areas in the oilfield services industry.

“However, we also believe we need to be pragmatic in that most of the oilfield services opportunities are longer duration in nature and weighted more towards 2020-plus,” he said.

Shell and its partners Petronas, PetroChina, Mitsubishi and KOGAS announced they would proceed with the Kitimat, B.C. project in October 2018, and construction is underway.

The \$40-billion first phase will include two processing trains that consume approximately 2 bcf/d for tidewater export. The project also has approval to expand with two additional trains to consume a total of approximately 4 bcf/d.

Analysts are optimistic that the expansion will also get the green light in the relatively near term.

“Our view is that all four trains will be [underway or sanctioned] before the end of

2020,” said Dulles Wang, director of North American gas with energy consultancy Wood Mackenzie.

Some of that will come well before the first phase of LNG Canada comes online in 2025.

AltaGas is currently commissioning the Ridley Island Export Terminal, the first propane export facility on Canada’s West Coast. The \$450 million to \$500 million project at Prince Rupert, B.C. is anticipated to benefit the Alberta and B.C. natural gas markets, reducing reliance on the U.S. for exports.

Also at Prince Rupert, Pembina Pipeline is building a propane/butane export terminal.

The \$250-million project is in the early stages of construction and is expected to be in service mid-2020.

In Alberta, two new major petrochemical facilities are also under construction. Both are propane dehydrogenation and polypropylene projects that will process Alberta propane into polypropylene pellets, which are used to manufacture a wide range of goods including currency,

medical products, automotive parts, food storage containers, and apparel.

Inter Pipeline’s \$3.5-billion Heartland Petrochemical Complex, which has been awarded up to \$200 million in committed royalty credits from the Government of Alberta, is expected to be operational in late 2021.

The \$4.5-billion PDH/PP facility joint venture of Pembina Pipeline and Petrochemical Industries Co. of Kuwait, has been awarded up to \$300 million in royalty credits, is expected to be operational mid-2023.

While the near-term will likely continue to be challenging for natural gas producers in Alberta and B.C., there is ‘light at the end of the tunnel’ for LNG and product exports.

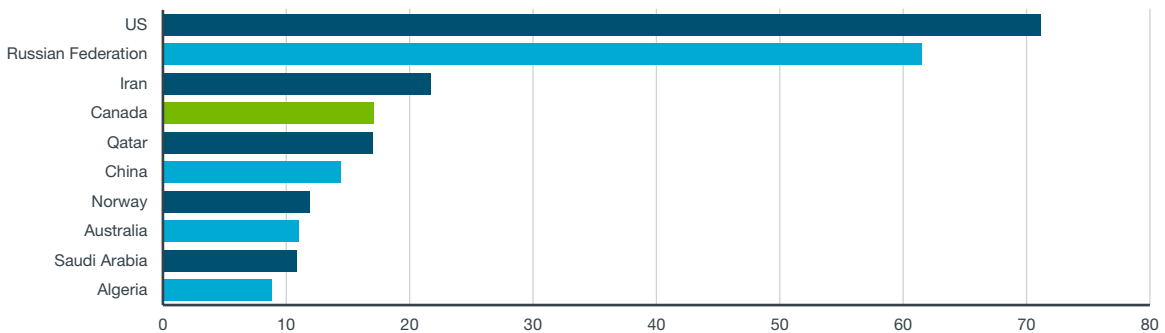
Reserves and Production

Canada, particularly in Alberta and B.C., is one of the world's largest natural gas producers and reserve holders.

While production has decreased in recent years with increasing competition from developments in the United States, Canada continues to be a significant global player with strong potential for the future.

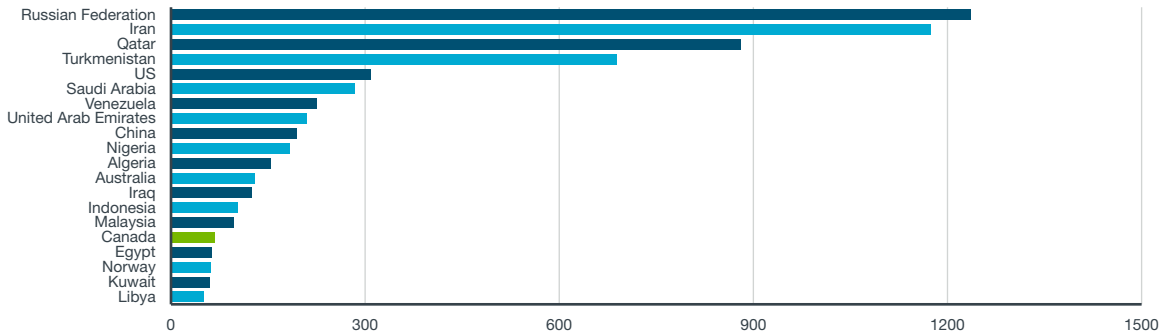
According to BP's 2019 Energy Outlook, Canada is currently ranked number five in natural gas production globally, and number 20 in the world for natural gas reserves. Importantly, this includes large reserves of high-value natural gas liquids.

Global Natural Gas Production (billion cubic feet per day)



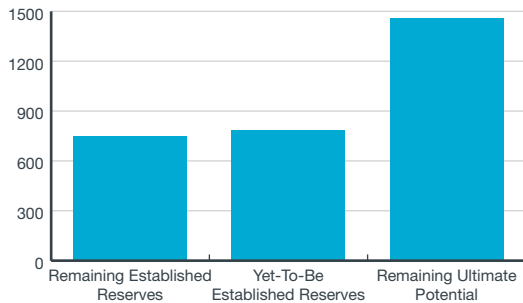
Source: BP Statistical Review of Energy 2018

Global Natural Gas Reserves (trillion cubic feet)

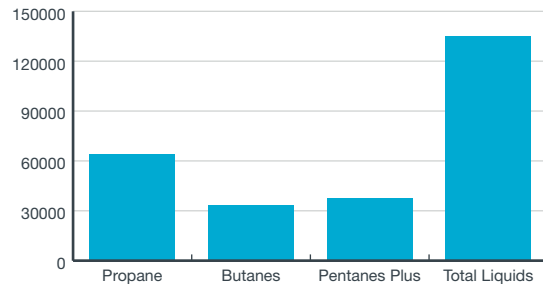


Source: BP Statistical Review of Energy 2018

Alberta Natural Gas Reserves



Alberta Natural Gas Liquids Reserves



Exporting Alberta's Natural Gas Products

The abundant low-cost supply of natural gas in Alberta and British Columbia is attracting more and more projects targeting international exports.

The big ticket is super-cooled LNG to displace coal-fired electricity in hungry Asian markets,

and major developments are also underway to export propane for cooking, transportation and heating; polypropylene pellets for plastics such as medical products and automotive parts; acrylic acid for coatings and paints; and methanol for products like sealants and electronics.

Project Status

Selected Key LNG Projects in Western Canada

Project	Owner(s)	Capacity (mtpa/bcf/d)	Capital Cost (billions)	Status
LNG Canada	Shell, PETRONAS, PetroChina, Mitsubishi Corporation, KOGAS	13-26/1.7-3.4	\$40	Under construction; completion expected by 2025
Kitimat LNG	Chevron, Woodside Energy	10/1.3	N/A	Chevron has applied to nearly double project capacity; completion expected by 2029
Woodfibre LNG	Pacific Oil & Gas	2.1/0.3	\$1.8	Final investment decision expected in mid-2019; completion in 2023

* Only projects with export licenses and regulatory approvals in place are included. Source: Canadian Energy Research Institute, company announcements

Selected Key LNG Projects in Eastern Canada

Project	Owner(s)	Capacity (mtpa/bcf/d)	Capital Cost (billions)	Status
Goldboro LNG (Nova Scotia)	Pieridae Energy	5-10/0.7-1.3	\$10	Final investment decision expected in 2019; completion in 2023
Bear Head LNG (Nova Scotia)	LNG Limited	8-12/1.1-1.6	\$6	
Énergie Saguenay (Quebec)	GNL Quebec	11/1.5	\$9	Final investment decision expected in 2020; completion in 2025

* Only projects with export licenses and regulatory approvals in place are included. Source: Canadian Energy Research Institute, company announcements

Cover Feature

Selected New Propane Projects in Western Canada

Project	Owner(s)	Capacity	Capital Cost (millions)	Status
Ridley Island Export Terminal	AltaGas	1.2 mtpa	\$450 to \$500	Operating – first shipment May 23, 2019.
Prince Rupert Export Terminal	Pembina Pipeline	600,000 tpa	\$250	Under construction; start-up expected mid-2020

Selected New Petrochemical Projects

Project	Owner(s)	Capacity (tpa)	Capital Cost	Status
Heartland Petrochemical Complex	Inter Pipeline	525,000 (polypropylene)	\$3.5 billion	Under construction; start-up expected late 2021
PDH/PP Facility	Pembina Pipeline/ Petrochemical Industries Company K.S.C. of Kuwait	550,000 (polypropylene)	\$4.5 billion	Under construction; start-up expected mid 2023
Methanol Facility	Nauticol Energy	3,000,000 (methanol)	\$2 billion	Proposed; start-up expected in 2022
Acrylic Acid and Derivatives Project	Inter Pipeline	80,000 (acrylic acid/propylene derivatives)	\$600 million	Proposed; start-up expected in 2022



Technology and Environment: Managing Methane

Alberta natural gas producers are developing and implementing new technologies to reduce methane emissions as they work to reduce costs and their environmental footprint.

There are many ways to benefit from taking early action to reduce emissions, according to Soheil Asgarpour, president of Petroleum Technology Alliance Canada. For one thing, since methane is a saleable product, escaping methane means escaping profits.

Most methane emissions come from small, widely distributed sources, making mitigation a challenge. Of some 174,000 operating oil and gas wells in Alberta, the majority have pneumatic devices, many of which were designed to vent natural gas as part of their operation.

Calgary-based Bluesource

Methane is one year into executing the largest full-service pneumatic controller replacement program in the oilpatch.

Since it started swapping out devices just over a year ago it has installed over 3,500 low- and no-bleed replacements for 15 producers. It has a target to install at least 7,000 devices by the end of the year and as many as 10,000 before the incentive disappears. That would represent about 10 per cent of the replaceable pneumatic devices in the province, the company estimates.

While replacing a single pneumatic device — whose emissions can range from below five to over 150 tonnes per year — may not amount to much, changing thousands could have an enormous impact. “Cumulatively we are

going to generate or yield about two to four million tonnes of greenhouse gas equivalent reductions by 2023 through this initiative,” said president Yvan Champagne.

NAL Resources was one of the early adopters. Speaking at the 2018 PTAC Methane Emissions Reduction Forum, Cory Bergh, vice-president said that working with Bluesource to switch out the company’s high-bleed pneumatic controllers was “a game changer for us” because it provided the expertise that NAL lacked.

Royal Dutch Shell has also been working to switch out its pneumatic devices in

its Canadian upstream natural gas production.

As a condition of the approval of Shell’s LNG Canada project, now

under construction at Kitimat, B.C., the province insisted that the \$40 billion project — including upstream, midstream and downstream — be the lowest carbon intensity of any LNG project in operation today as part of its plan to achieve the province’s legislated climate targets of reducing GHG emissions by 40 per cent by the year 2030 from 2007 levels.

As part of those efforts, Shell is moving to a zero-bleed well pad design engineered by its team at the company’s Groundbirch natural gas asset in northeast B.C. The new design not only dramatically lowers well-site methane emissions but also increases production at lower cost. The sprawling Groundbirch asset incorporates almost 500 producing wells tapping the Montney formation, which is also a leading natural gas play next door in Alberta.

Since methane is a saleable product, escaping methane means escaping profits.

Cover Feature

After examining where gases were being emitted from the company's well pad facilities, Shell determined it could make reductions by switching out its pneumatic actuators to zero-bleed electric valve actuators. But because existing technology wasn't typically used in that fashion, Shell had to redesign the well pad to accommodate it.

Not only does the company's new Generation 4 multi-well pad design, which also utilizes solar power and thermoelectric generators, reduce GHG emissions an estimated 90 per cent, but it was found to increase production 46 per cent while lowering pad costs by 15 per cent, the company said. The design has become the new standard for the company across its operations.

Many other companies have moved to swap out gas pneumatic controllers and pumps with alternatives like instrument-air control systems across their operations. Other technologies can also significantly cut methane emissions.

When Encana Corporation installed vent gas capture systems at 59 natural gas compressors in southern Alberta, it recovered about 175 mmcf of natural gas annually, reducing emissions by more than 69,000 tonnes of CO₂ equivalent and generating about \$1 million per year in carbon offsets.

Canadian oil and gas associations launch 'immense' joint methane program

In November 2018, three major Canadian oil and gas industry associations launched a new large-scale applied research project focused on methane leak detection, quantification and repair.

Described as "immense in scope," the Fugitive Emissions Management Program Effectiveness Assessment (FEMP EA) project has funding support from over 400 oil and gas producers through the Alberta Upstream Petroleum Research Fund.

The FEMP EA project covers 2,500 square kilometers in the Red Deer region and includes participation from 30 producing companies and nearly 200 oil and gas facilities.

Project objectives and design have been informed by a review of over 100 studies conducted by Stanford University. Completion is expected by November 2019.



Natural Gas Q&A



Peter Tertzakian

Executive Director, ARC Energy Research Institute

We've been hearing that a crisis is underway in Western Canada's natural gas industry. Is it?

I do think it's a crisis on many dimensions. It's in many ways a good news, bad news story.

The good news is that with modern technology and innovation, which started with the shale gas revolution, we're able to bring far greater quantities of natural gas out of the ground with a lower footprint, at a much lower cost.

If you contrast that against where we were a dozen years ago, the reverse was the case where costs were going higher and higher [and] we were on the proverbial treadmill where it was becoming harder and harder to offset declines.

The good news is that the ability to manufacture gas out of the ground has improved substantially. The other side of that is that if you don't have the takeaway capacity, then you very rapidly create a glut and the price collapses and is very sensitive to the seasonality which is associated with natural gas.

It's a dramatic loss of revenue to companies, but more importantly to Albertans as the resource owners.

How do the offtake issues facing the natural gas industry compare

to those facing the oil industry?

It's more acute on two dimensions. In Eastern Canada there is head-to-head competition with U.S. shale gas producers. In other words, our prime customer doesn't need as much of our gas at the same time as we're able to produce more at lower cost. The outlets in Western Canada are [also] unable to cope with the extra quantities.

The hope always has been, for I think over 15 years, that an LNG facility will be built so that we can have alternative markets and really large takeaway capabilities. Hopefully that's finally going to come to pass in the next few years.

How large of a role does Western Canada currently play in "the new natural gas economy," to replace coal globally with LNG, and to produce more petrochemicals?

In Alberta and Saskatchewan, if you look at natural gas consumption, it's risen dramatically. In Alberta it's because of oilsands consumption, which is not really the new economy, but there has also been displacement of coal, which has been in part facilitated by renewables but in part also by natural gas.

In Saskatchewan there's been quite a

Cover Feature

dramatic increase in natural gas consumption, and there it has been a coal substitution as well.

Is Alberta's goal of increasing its participation in the growing global natural gas economy within reach?

I think it finally is. LNG Canada construction is underway, scheduled for [completion in] 2024 to be conservative. That's only a little over four years away by the time it's all said and done, so that's tangible.

The flip side is it's probably going to be another four years of difficult prices. There are some new pipeline takeaways that are being constructed, so we might see some respite by 2021, but the next 12-24 months is quite challenging.

What impact will the new petrochemical projects being built in Alberta have on the market in Western Canada?

They are definitely good for the demand side, but in terms of the big picture we need to have takeaway capacity measured in billions of cubic feet. The typical petrochemical plants are measured in the hundred million, one-tenth of a bcf, so really it's a matter of scale.

What view do you think investors currently take of Western Canada's natural gas industry?

I think this is definitely a low point. I think this summer is going to be a low point, by all accounts.

In that regard, one can view it opportunistically, but I would say that investors are cautious because they've heard the hope-for-LNG story. Investors in oil and gas are very much in a 'show me' mode. I think they'll be waiting to see.

Having said that, on the value-added side it's a different kind of investor, for petrochemicals or other uses of natural gas domestically. What they see here is a long-term, stable supply of natural gas that is unlikely to be as volatile in price as it has been historically.

Investors into the value-added side of it are already coming and I think you'll see more of that, potentially enhanced by the UCP government's stated intension to reduce the corporate tax. I think that will probably stimulate more interest in value-added companies, not just petrochemicals but any energy-intensive [project] or

any company that uses natural gas as a feedstock.

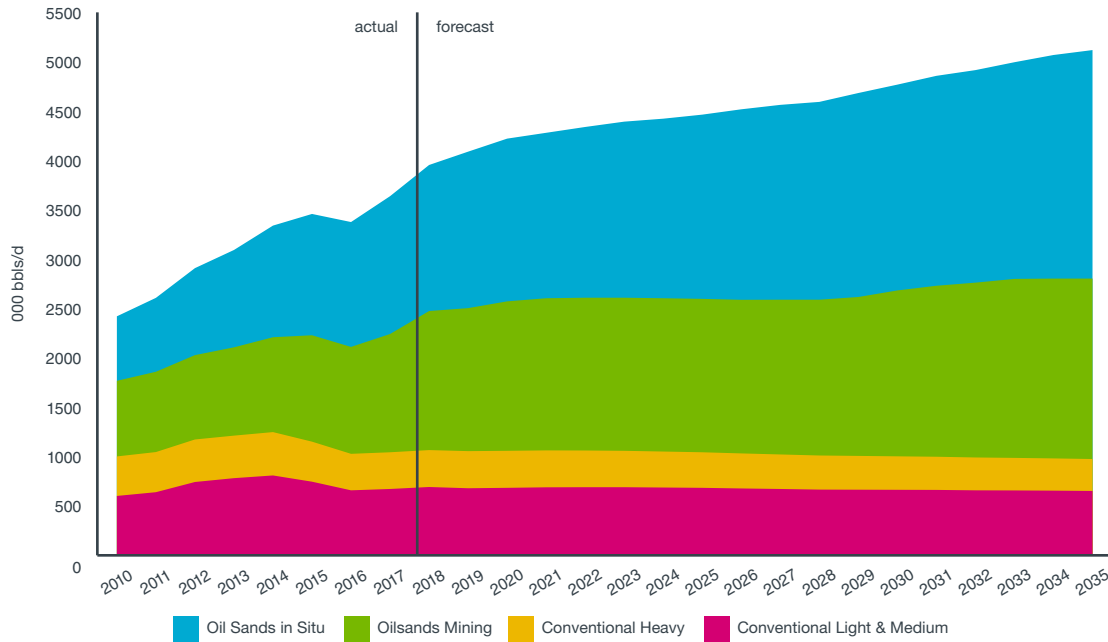
What will you be watching in the coming months?

I think all eyes remain on the LNG really, because the North American market is very saturated with gas, [it's] very competitive, and so we need to have the outlets to export the gas to get premium pricing and ease the bottlenecks.

'All eyes remain on LNG because the North American market is very saturated with gas... We need to to have the outlets to export the gas to get premium pricing.'

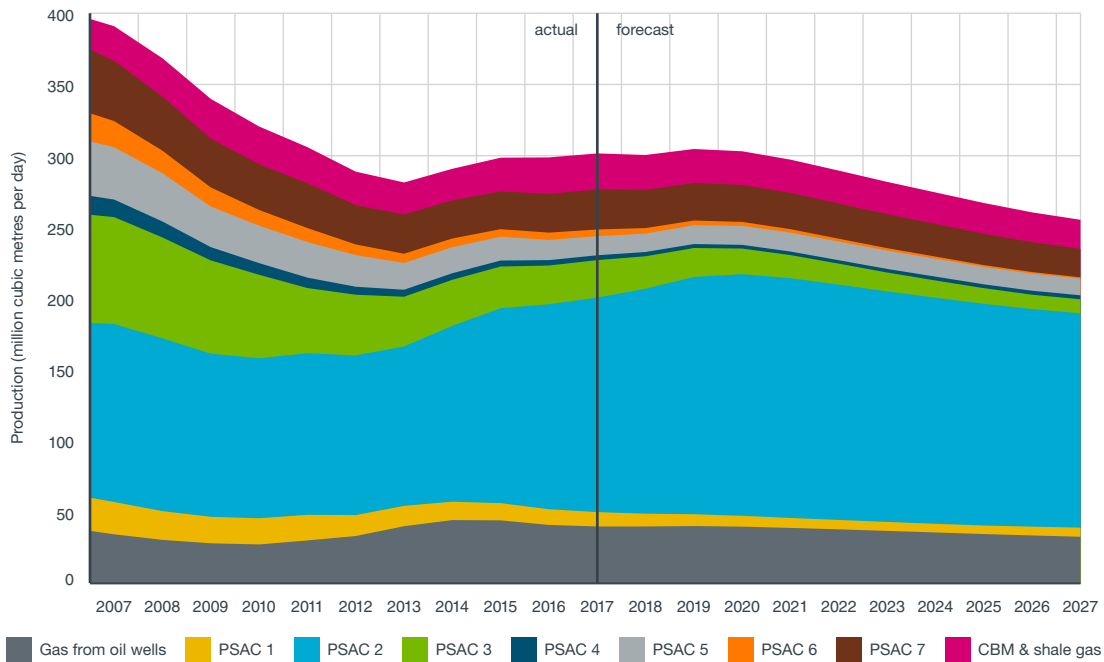
Alberta Oil & Gas Data

Western Canada Conventional Oil and Oilsands Production



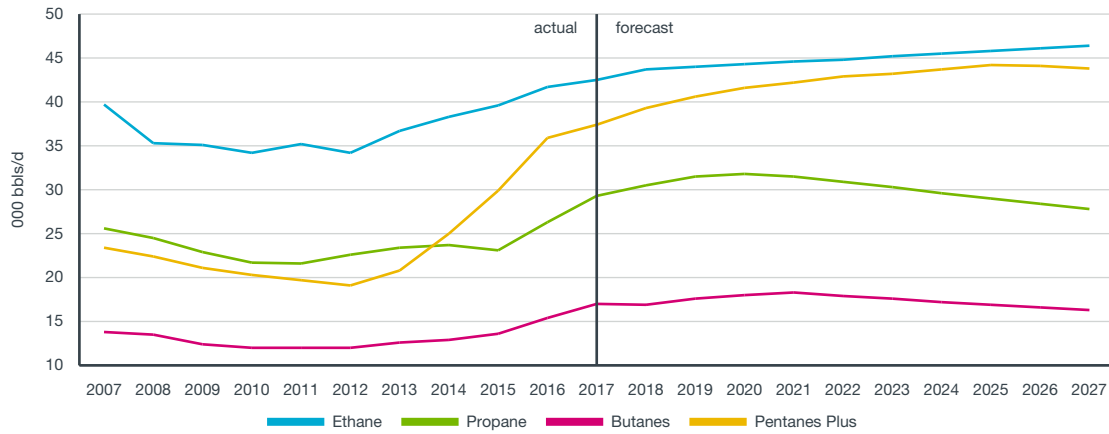
Source: CAPP
* Includes upgraded oilsands volumes

Alberta Marketable Natural Gas Production



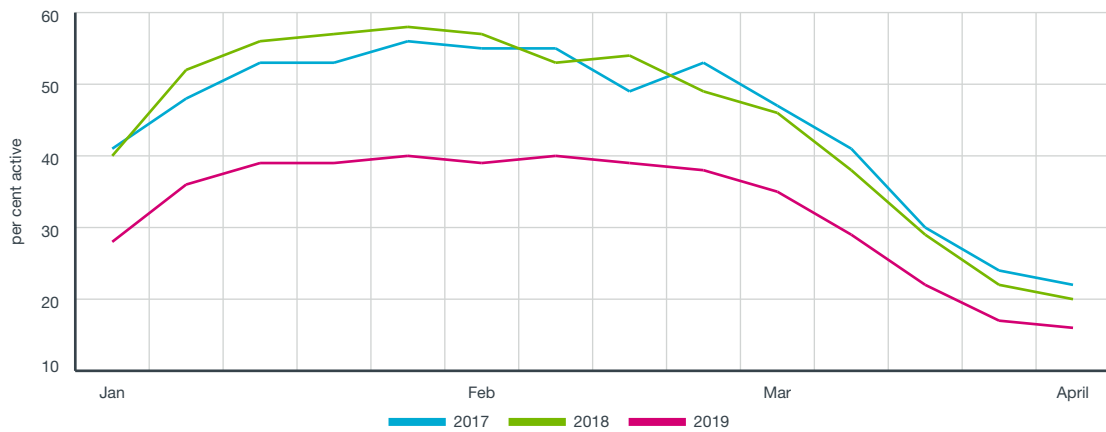
Source: AER ST-98

Alberta Natural Gas Liquids Production



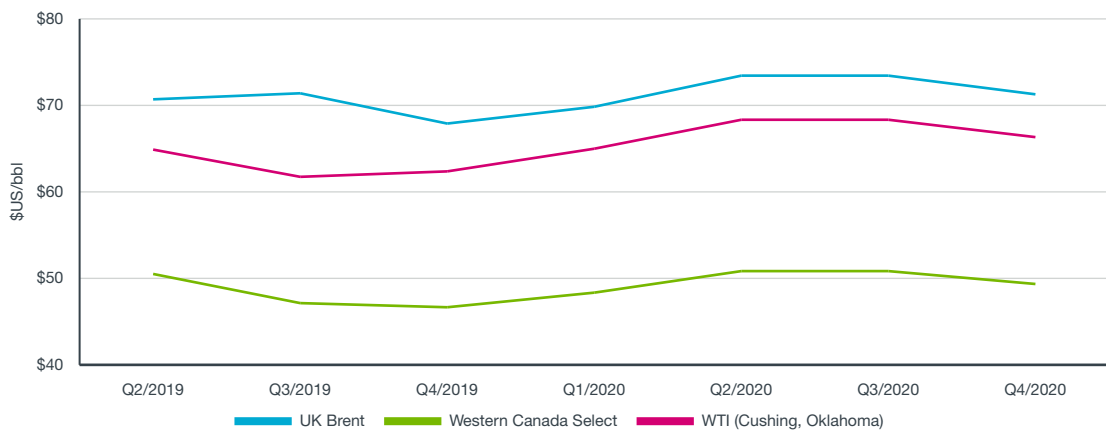
Source: AER ST-98

Western Canada Active Rig Count



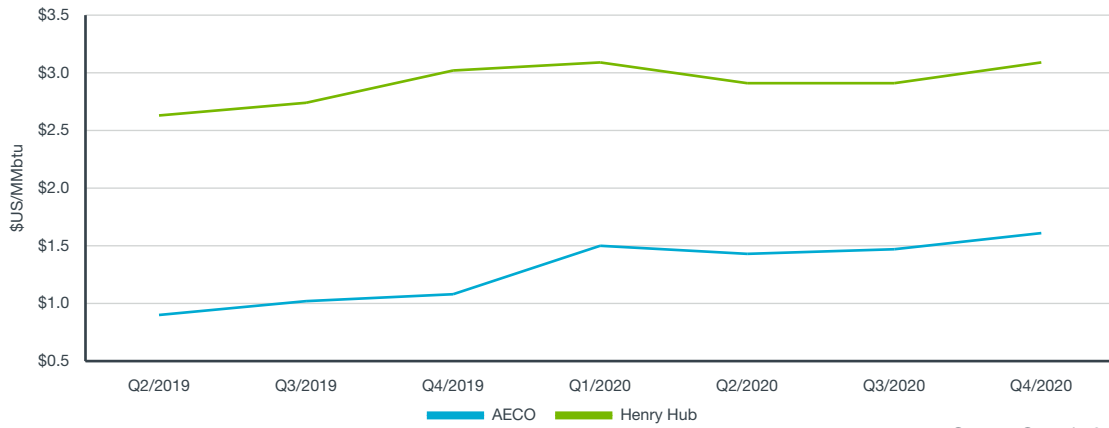
Source: Daily Oil Bulletin

Crude Oil Price Forecast



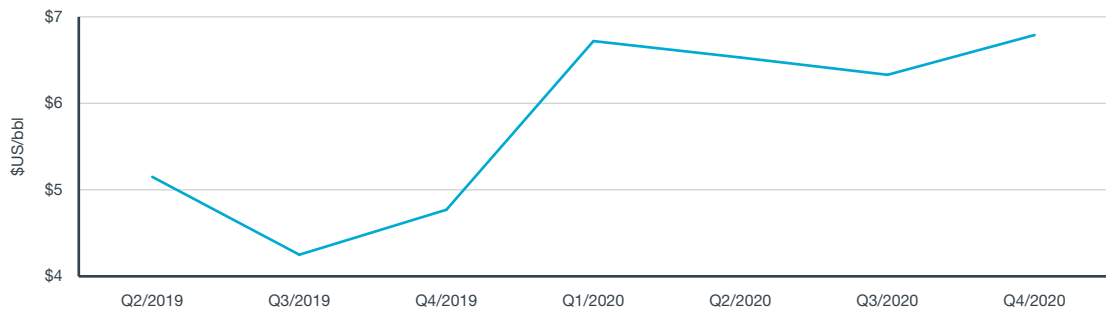
Source: Sproule & GTI

North American Natural Gas Prices Forecast



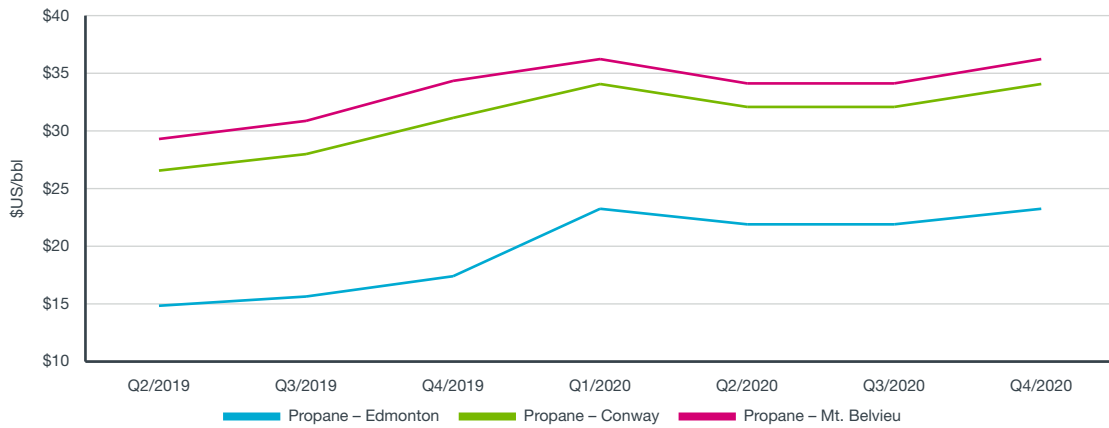
Source: Sproule & GTI

Ethane Price Forecast – Alberta Plant Gate



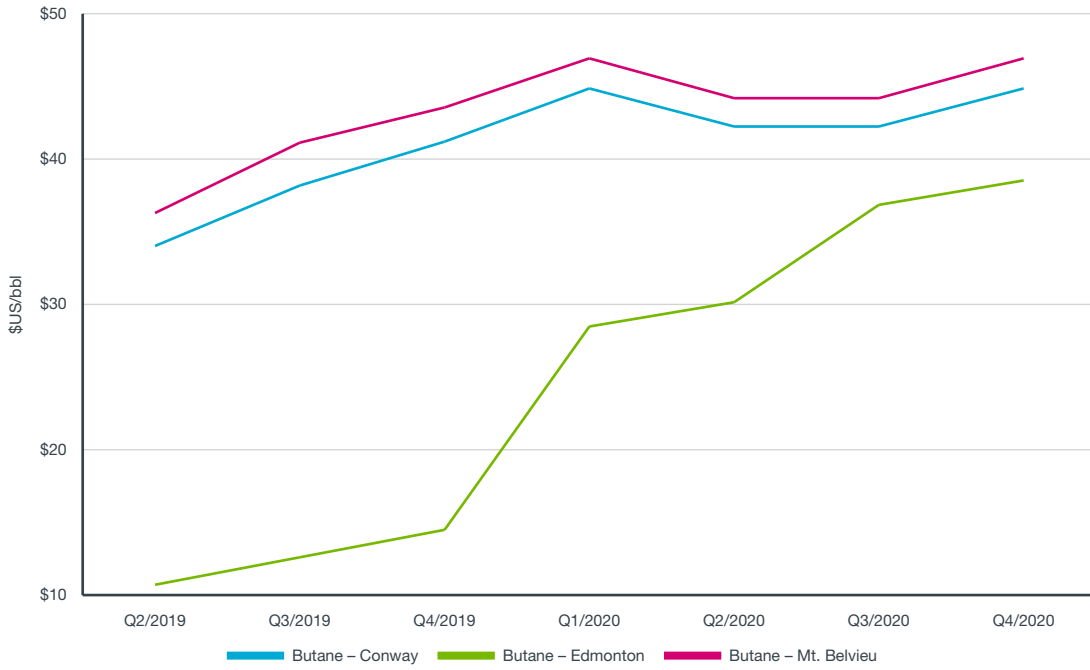
Source: Sproule & GTI

Propane Price Forecast



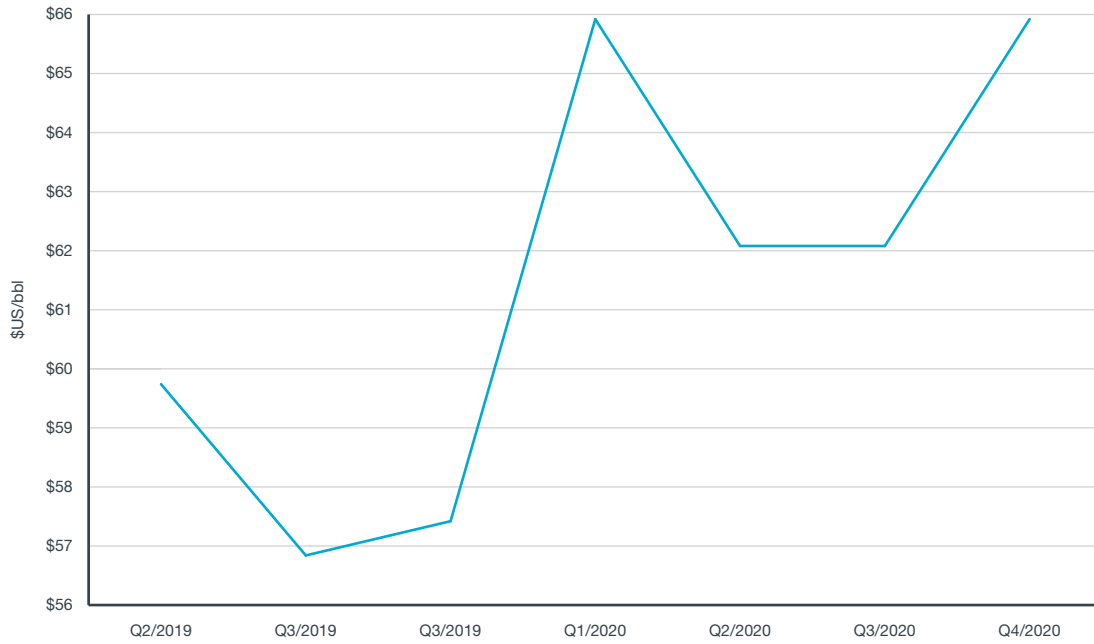
Source: Sproule & GTI

Butane Price Forecast



Source: Sproule & GTI

Condensate Price Forecast - Edmonton



Source: Sproule & GTI

Myth-busting

Myth: First Nations do not support development of Canada's natural gas resources



Haisla Nation Chief Councillor Crystal Smith.

Photo: Haisla Nation

There is generally strong support for an LNG industry among B.C. First Nations, and some take exception to the anti-fossil fuel coalition – the BC Green Party and environmental groups like the Sierra Club – opposing a \$40 billion project like LNG Canada, which would generate an estimated 10,000 jobs at peak construction and 950 permanent jobs, from Dawson Creek to Kitimat.

One First Nation leader has even politely told the Sierra Club to back off.

In response to a letter to the Times Colonist editor in January from Sierra Club campaigner Caitlyn Vernon, who warned of negative impacts of an LNG industry on tourism, Haisla Nation Chief Coun. Crystal Smith fired back: “Before the Sierra Club writes any more about LNG in B.C., I invite them to spend time with the many First Nations who support LNG development.”

Along the route of the Coastal GasLink pipeline that will bring natural gas from northeastern B.C. to Kitimat to supply the LNG Canada project, most First Nations have

signed benefits agreements. Last year, the provincial government reported 64 agreements had been signed with 29 First Nations along pipeline routes for various LNG projects – about 90%.

The agreements typically include opportunities for First Nation businesses and contractors along the pipeline route to bid on contracts for things like site clearing and supplying work camps, said Karen Ogen-Toews, former chief of the Wet’suwet’en First Nation and current CEO of the First Nations LNG Alliance.

‘I invite [detractors] to spend time with the many First Nations who support LNG development.’

For the Wet’suwet’en, LNG provides economic development opportunities – skills training, new business development and new revenue streams – in a region where few other economic opportunities exist.

“When we’re able to do those things, then we’re able to say, ‘This is our own-source revenue,’” she said. “We’re able to build more houses. We’re able to increase the quality of life in terms of education and training. We’re able to look after the health and wellness of our community.”

Contacts

Alberta Government

Alberta Advanced Education

www.alberta.ca/advanced-education

Alberta Energy

www.alberta.ca/energy

Alberta Energy Regulator

www.aer.ca

Alberta Environment and Parks

www.alberta.ca/environment-and-parks

Alberta Geological Survey

www.ags.aer.ca

Alberta Innovates

albertainnovates.ca

Alberta Surface Rights Board

www.surfacerights.alberta.ca

Industry Associations

Alberta Land Surveyors' Association

www.alsa.ab.ca

Canada's Natural Gas

www.canadasnaturalgas.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 Natural Gas Vehicle Alliance

www.cngva.org

Canadian Society for Unconventional Resources

www.csur.com

Canadian Society of Exploration Geophysicists

www.cseg.ca

Canadian Society of Petroleum Engineers

www.speca.ca

Explorers and Producers Association of Canada

www.explorersandproducers.ca

Gas Processing Association of Canada

www.gpacanada.com

Petroleum Services Association of Canada

www.psac.ca

Petroleum Technology Alliance Canada

www.ptac.org

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