



Unleash the shackles on our energy exports

Canada can, and should, supply our responsibly produced energy to the rest of the world. Being allowed to do so would allow us to obtain fair value for our natural resources, and help the world meet growing energy demand.

Yet we continue to impede on our own ability to get our energy products to market. Market access constraints, along with regulatory and fiscal policy barriers, are holding us back.

Globally, one billion people do not have electricity and three billion people use fuels like wood or biomass to cook, impacting their health, quality of life and environment. By 2040, the International Energy Agency (IEA) projects there will be another 1.7 billion people in the world, mostly added to areas still pulling themselves out of poverty.

Along with this population growth, global energy demand is expected to increase by 27 per cent. Oil and natural gas will remain the dominant sources of energy well into the future.

Canada has an opportunity to meet this demand with responsible energy produced the Canadian way.

Demand for natural gas is expected to increase 43 per cent in the next two decades, and by 2040, the IEA projects it will supply one-quarter of total energy consumed in the world. Canada should capitalize on the coming growth for LNG, not only for our own benefit, but also for an important global benefit.

Canadian LNG can play a key role in reducing global GHG emissions by displacing coal-fired electricity generation in China, India, Southeast Asia, and parts of Europe. Seventy per cent of China's emissions—which account for more than one-quarter of global emissions—are generated from coal-fired power pro-



Stacey Hatcher

duction.

Canada's contribution to reducing global GHGs must be recognized domestically and internationally and count toward our commitment under the Paris Agreement through offset credits.

Article 6 of the Paris Agreement must be finalized to enable countries to share offset credits, called Internationally Transferable Mitigation Outcomes (ITMOs), between participating nations. This was debated extensively in December 2018, but the United Nations Conference of the Parties only reached draft decisions.

The discussion will continue at their next meeting later this year. The Canadian government needs to take a leadership role in finalizing the negotiations on ITMOs, and look beyond our borders to take a global perspective on emissions reduction.

Through global offset credits, Canada could still meet its commitments under the Paris Agreement, while growing our LNG industry to meet global market demand. If Canada received 50 per cent credit on global offsets, five Canadian LNG facilities would meet or exceed our commitment under the Paris Agreement.

It is time for Canada to unlock the potential of our energy industry to achieve full domestic and global benefits. The world needs more Canada.

The path forward must include a clear government

commitment to resource development, a competitive fiscal environment, and an efficient regulatory system enabling new projects to be approved and constructed in a timely manner.

CAPP is calling for the government to withdraw Bill C-48, which proposes a tanker moratorium on a significant portion of Canada's West Coast. It would block Canadian petroleum products from traveling those waters and getting out to new markets.

Ironically, Bill C-48 will only block the export of Canadian-produced petroleum products; it cannot stop foreign vessels from carrying the same products through the same waters.

Bill C-48 also creates new barriers to Indigenous economic opportunity and self-determination. Groups such as the Eagle Spirit Chiefs Council, the Indian Resource Council, and the National Coalition of Chiefs have all expressed concerns.

The federal government's proposed Bill C-69—under Senate review—is also problematic. This overhaul of the regulatory approvals process will only make the system more complicated, unless significant changes are made to Bill C-69.

New pipelines and the expansion of existing infrastructure are critical to the future of the industry. Market access constraints must be resolved.

We need seize opportunities to diversify Canada's oil and natural gas markets. The bottom line is, we need to be competitive on a global scale to achieve the things we all value—responsibly produced resources that benefit Canada and the world.

Stacey Hatcher is vice-president, communications, Canadian Association of Petroleum Producers.

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Spring 2019

Mining, Energy & Manufacturing



Reclaiming the Enbridge pipeline right-of-way

Crews will be working on right-of-way this summer

What happens after Enbridge's Line 3 replacement pipeline is in the ground?

With construction of the Line 3 replacement pipeline essentially complete in Canada, the process of reclamation—returning the land to its former use and productive capability—is set to begin in Saskatchewan and Manitoba.

Banister Pipelines is overseeing the work on behalf of Enbridge over approximately 280 kilometres from Regina, through the Moosomin area, to Cromer.

A crew of approximately 180 is mobilizing to begin about June 10 and working their way southeast from Regina.

Weather permitting, the expectation is the crews will be in the Moosomin area around mid-August and likely using the Banister construction office as home base during this time.

"Our promise is to restore the pipeline right-of-way to as good or better condition than it was before construction, and to minimize the long-term impact to the land along our pipelines," says Allen Sawatzky, Construction Manager for the Line 3 project.

"Before construction takes place, we obtain regulatory approval and the environmental permits which prescribe specific reclamation measures and techniques proven to be successful in past projects."

Most reclamation occurs within the first year following construction. However, it can take longer, depending on weather and other environmental conditions. The first phase involves a more visible presence of workers. As the work winds down, crew sizes diminish as well.

A critical component of right-of-way reclamation involves working with landowners, from the outset of a project, to reach agreement on property-specific items that will be addressed during and

This photo and the photo below left show some of Enbridge's reclamation efforts in the local area.



after construction. "This could include things like repairing fences, driveways or landscaping, seeding hay land and native prairie areas, long-term erosion control measures in environmentally sensitive areas, and special care to be taken when working around livestock," Sawatzky explains.

During excavation for the Line 3 replacement pipeline, topsoil was separated from the subsoil to ensure the land remains productive for agricultural purposes after construction.

The land is re-contoured to maintain drainage patterns, hay land and native prairie areas are reseeded, cultivated land is prepared for planting, and wetlands and watercourses are stabilized and revegetated to prevent erosion and ensure habitat is restored for the many plants and wildlife along the line.

"Although most temporary workspaces will be allowed to grow back, we will generally maintain an approximately 12-metre-wide permanent right-of-way free of structures, trees and shrubs so that the pipeline is visible during aerial inspections and accessible in the case of an emergency," Sawatzky adds.

To prepare the right-of-way for final reclamation, crews have been out and about in all of the 2018 construction areas making sure everything is okay during spring break-up.

"We've got a full complement of staff out there doing general maintenance," Sawatzky says. "Topping up gravel here and there, some erosion control, sign maintenance, gate repairs, hydroseeding—things like that," he says. "We're talking with landowners and staying on top of it."

One such request came from a landowner in the Maryfield area whose tractor was stuck on the right-of-way.

"We got the tractor off, cleaned it up, put some mats down, and got it across," Sawatzky says. "And he's happy because we were able to do it the next morning."

The Reclamation Process

Enbridge takes numerous measures to minimize the long-term impact along their pipeline rights-of-way. Here are the steps involved:

- After pipe installation but prior to topsoil replacement, environmental crews respond to subsidence and/or drainage issues that create access problems for farmers or landowners, public safety issues, or to prevent environmental issues such as erosion;
- Reclamation begins by removing construction debris, access ramps, and re-contouring the right of way to its original profile;
- Once the subsoil on the right of way is re-contoured, the entire right of way is de-compacted where heavy equipment has been working to prepare the right of way for the replacement of stored topsoil;
- Next, crews pull the stored topsoil piles back over the right of way and distribute it evenly over the area in which it came from, preparing the areas for seeding and revegetation;
- Finally, native prairie and hay lands areas are seeded, cultivated lands are straw crimped to prepare for the planting of the next crop, and pasture land fences are repaired.



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Customized by Universe Satellite Sales:

First Roxor going underground at Nutrien Rocanville

BY KEVIN WEEDMARK

The first Mahindra Roxor customized by Rocanville's Universe Satellite Sales for the mining industry is going underground at the Nutrien Rocanville mine, and owner Stan Langley hopes its just the first of many Roxors to be put to work in the mining industry.

"When Mahindra came to us and asked us if we wanted to take on the Roxor line, we didn't really feel like we needed another product to sell here, but after looking at them and taking one for a drive we figured this might be a unit that would work really good underground," says Langley. "It's built rugged and it's more like a truck than a side by side or UTV, so we figured we would take on the line."

"Once we got a couple of them in I had someone from the Rocanville Nutrien mine and someone from Mosaic come in and we had one of the Roxors sitting in the back shop and I said 'okay, if you're starting out and you're going to build a vehicle of your dreams to have underground, what would you do to this vehicle?' So they came up with a few ideas on the bumpers and different things on it."

"Because I worked at the mine, I knew some of the things they had to have, and I wanted to involve them to see what they would want."

"After we did that, we brought in Scott Norton, and Scott had actually built some of the original mine vehicles that went underground years ago when the mine first started. He built us the bumpers and the toolbox and things like that."

"The original bumpers that come on them were very small and they didn't cover the full back part of the unit and the tail lights would stick out a bit," Langley explains.

"We have a bumper that will stick out a little further so you don't take out a tail light, you don't damage the box. They are a wee bit wider than what the body is so if they rub up against a wall or a belt the bumper should hit first, and that's what we did with the front so damage to the machine wouldn't happen. That bumper is a wee bit wider and sticks out a little bit further than the body."

What other customization has gone into the underground Roxor?

"We've taken out the key from the ignition system and we just have a toggle switch there for turning the power on and we just have a push button start, so they don't have to worry about having to find a key or if someone accidentally takes a key—it's just a push button start."

"They have master lock-outs so when you're working on a piece of equipment you can lock all the power off to that unit so it can't be started, which we added as a safety feature."

"It's got the warning



lights on it so they have an amber light when they're driving down the drifts or if they are parked in the drift it's flashing. If they are towing, the amber light will turn to a blue light because blue means they're towing.

A toolbox was added that slides open from the back of the first customized Roxor.

"The first one that we are putting down in Rocanville actually has a toolbox in the back of it," Langley explains.

"They've actually just released a four seater model that we're going to bring in, so that might even make it a little better where they can actually be used to carry a four person crew."

Vehicle height can be a challenge, so the Roxor going underground has been fitted with smaller wheels to reduce the height.

"We were able to meet the height requirements by going with a smaller rim and set of tires on it so we didn't have to alter the rollover protection system at all," explains Langley. "We actually just went with a smaller tire."

Langley says the Roxor may meet a need in the mining industry.

"I think there could eventually be lots of them underground," he said. "The first one is always the hardest one to get down, to prove yourself. If it can prove itself I be-

lieve the prices on these units are quite a bit lower than some of the stuff they have been using in the mine. They've been buying a lot of different models hoping to find the right thing. I'm just hoping this is the right thing."

The first Roxor was ready to go down the Nutrien shaft last week.

"We had to take the front and rear bumpers off because all we are allowed is 144 inches in length, so the bumpers come off and the tailgates come off to go down the shaft, and we just put it back together, put on the bumpers once it's down. It's not a lot of bolts to put that bumper back on, and she'll be ready to roll."

The Roxors are powered by a four cylinder 2.5 litre turbo diesel. The Engine Control Unit on the first Roxor going underground has been reprogrammed to set the top speed at 40 km/h, the speed required in the mine.

While the first Roxor is going into the Nutrien Rocanville mine, Langley is hopeful to have one in the Mosaic mine as well before long.

"Mosaic has been in talks with us a fair bit on them," he said. "Because their shaft is a little smaller than Rocanville's where they want to take it down, they have to take it from the nose and lift it up and then lower it down that way, so they have to have an engineered lift procedure for it and they contacted me the other day that they will have someone coming out here from an engineering firm to do that design on there, so I'm 99 per cent sure that they will be taking one underground there too to try."

Langley believes there is a good potential market for the Roxors in the mining industry.

"They've tried a lot of different vehicles down there," he said. "They have Toyotas, John Deere Gators, Kioti side-by-sides."

"There isn't a vehicle that's really manufactured for mining. I've been after the manufacturers, saying why don't you come up with a really good diesel vehicle that meets the height requirements? There's a big market. But when you have to build something like that to work underground, it costs a lot of money in R&D and engineering. Mahindra has come out with something as an off-road vehicle that looks like it might be very close to the fit that they need for the mines. They're built heavy and sturdy so I'm hoping they will work well. There are a lot of potash mines in Saskatchewan and it would be nice to supply them."

"Once this one is underground I'll be talking to them every day. I'll want to know if they think it needs anything else or anything that could be done better. I know Mahindra is very interested in making sure this works for them, and they're going to work with us. I hope it works out. It would be nice to have a couple of guys just putting these together all the time."



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Spring 2019

Mining, Energy & Manufacturing



Senator serves on committees that reviewed Bills C-48 and C-69

Michael MacDonald proud of Senate's role

BY KEVIN WEEDMARK

One day after the Senate transport committee rejected the federal moratorium on oil tankers in northern B.C., the energy committee that studied C-69 voted to approve 187 amendments to the bill, which would make developing resource projects more difficult.

Senator Michael MacDonald happens to be a member of both the Senate Transport Committee that rejected Bill C-48, and is the deputy chair of the Senate Energy Committee that proposed all the amendments to Bill C-69.

He said the senators' amendments came from groups and governments across the country.

"We heard from the Canadian Association of Petroleum Producers, from the workers in these industries, from communities affected by these industries, and from provinces," he said. We went to people who knew what they were talking about on the impact of the bill. The independent senators had a number of amendments as well. We gave them our support, and we got ours passed, and now it's up to the government to decide which of those 187 they're going to keep.

"One of the most important amendments we proposed is curtailing the minister's ability to go in there and arbitrarily shut everything down because they feel like it.

"Another one is stopping intervenors from coming in from anywhere in the world. We want a lot of this stuff tightened up.

"We're pleased that we got a lot of our amendments on the table. Now we'll see. When the government is run by a bunch of idealogues I don't expect too much, unfortunately. Hope springs eternal, but this is not a government that has been open to accepting too many things unless you put them in a corner."

MacDonald said the amended bill now goes back to the Senate. "It goes to third reading, and it can be amended at third reading, so I expect there may be more amendments to come. They're voted on by the entire Senate.

"Once the bill is eventually called, I assume it will pass, and then it will go back to the House, where they will have to decide which amendments they're going to accept and which ones they're not."

The bill will go back before the senate for third reading during the last week of May, and then it goes back to the House of Commons.

What did MacDonald learn in the hearings on Bill C-69?

"I always thought it was problematic. I always thought it was undermining national unity," he said. "But in the hearings



I learned that there is a much better understanding in the West of what it's doing to the economy."

Moosomin's economic development committee was among those that submitted briefs to the Senate Energy Committee on Bill C-69. The community had earlier hosted an energy rally with federal Conservative leader Andrew Scheer, Sask Premier Scott Moe, New Brunswick Premier Blaine Higgs, and Senator Denise Batters.

MacDonald said he believes the community had an impact on the national debate.

"The brief got read and looked at and assessed, and we had a lot of briefs from a lot of communities and groups that led to those amendments.

"The one thing I noticed about this bill—you see a lot of bills where all you get is cut-and-paste stuff. 'Sign here and send this message off.' But what I noticed about this bill was the number of independently sourced letters from people who have great experience and insight into the oil and gas industry, engineering, mining, investment, movement of capital. Just a really great cross-section of well-educated and professional people who have written in with insights that we never would have got sitting around the table in Ottawa. Certainly not from the bureaucrats.

"You have engineers who have worked both upstream and downstream over a 40-45 year period. They're pretty knowledgeable and it shows.

"I was impressed by the amount of well-written independent correspondence we received on this bill from people who have something to say.

"People who are well-versed in industry and managing environmental issues and managing growth, and have a lot of experience in some of these industries are fully cognizant of the damage this bill could do

there for the past number of years. I'm hoping for the best."

MacDonald said he believes the lack of pipelines puts Canada at a disadvantage.

"We have a common market in oil in North America. Basically it's a free market. We operate with the Americans. They're taking our oil at discounted prices and putting it through refineries in the Southern U.S. I don't blame them for that. We have to sell it there, because we can't get it onto the world market. All the money is bleeding out of this country and going there, and the Americans are producing more oil than ever, and they're selling it on the world market. They have the best of both worlds, and we have the worst. You can't blame them. They're just doing what the market lets them do."

He said he is happy with the work the senators did on the file.

"I'm satisfied with the work my colleagues an myself did. I'm glad that we insisted on doing the work in the senate that wasn't done well enough in the Commons.

"We have a responsibility. If we see a bill that's so badly flawed it's going to damage the government in so many ways, economically, socially and everything else, then I think we have an obligation to try to make it better. But the government doesn't have to accept it. We put a lot of time and effort into this, and I think we raised the profile of the bill with the Canadian public. We'll see if we raised it with the government.

"But one of the things about Canada is we're a pretty resilient country. We have an election every four years, and we have a chance this October to do something about it."

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Spring 2019

Mining, Energy & Manufacturing



Saskatchewan has lots of mining potential

Saskatchewan ranks second in the world for mining investment attractiveness, according to the Fraser Institute's Annual Survey of Mining Companies: 2017, which evaluated 91 jurisdictions.

Saskatchewan's rich mineral resources, efficient regulatory environment, and strong investment opportunities have attracted most of the global major mining companies to Saskatchewan.

In 2016, the value of Saskatchewan's mineral sales was approximately \$6.4 billion—the fourth highest in Canada.

Exploration expenditures in 2016 were \$199 million and are forecast to reach \$177 million in 2017.

Saskatchewan has two of the most desirable minerals in the world—potash and uranium.

The province has the largest potash industry in the world, accounting for about one third of annual global production and hosting nearly half of the world's known resources.

The world's largest high-grade uranium deposits are located in northern Saskatchewan, which account for just over 22% of the world's primary uranium production in 2016.

There is also unrealized potential in base metals, particularly zinc and copper.

The Flin Flon mining camp, which straddles the Manitoba-Saskatchewan border has been a substantial producer for decades and is estimated to have the highest contained value of base metal ore per square kilometer in Canada.

The existing infrastructure makes exploration more attractive for companies.

There are areas with high gold potential that remain under-explored.

In 2016, the Seabee operation had its third consecutive year of record production, generating 77,600 ounces of gold.

Exploration expenditures have traditionally focused on the La Ronge Greenstone Belt and areas north of Lake Athabasca.

The province is home to one of the world's largest fields

of diamond-bearing kimberlites.

Ongoing discoveries in the northeast part of the province have highlighted Saskatchewan's potential for diamonds.

The province also produces coal, salt, silica sands, kaolin, clays, as well as sodium and potassium sulphates and has strong potential for economic deposits of copper, zinc, nickel, rare earth minerals, and platinum group elements.

In order to encourage and attract investment, Saskatchewan has established several incentive programs in the minerals sector, such as:

A 10-year royalty holiday for new gold and base metal mines; and

A 5-year incorporation tax rebate for mineral processing.



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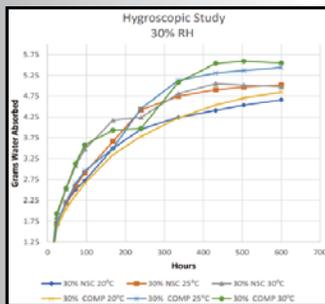
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April oil and gas public offering raises \$1.5 million

The April public offering of Saskatchewan's Crown petroleum and natural gas rights held on April 9, the first offering of the 2019-20 fiscal year, raised a total of \$1.5 million for the province and was focused on the Swift Current area.

The public offering on April 9 saw 38 leases purchased, totalling 5,595,875 hectares. The Swift Current area received the most attention, with 14 leases, totalling 2,106,288 hectares, being sold for \$914,349.97. On both a fiscal and calendar

year basis, Saskatchewan continues to post the highest average-per-hectare revenues among the western provinces—a clear indicator of Saskatchewan's continuing competitiveness and status as a jurisdiction of choice for the industry.

"Industry sources frequently identify Saskatchewan as having a very attractive operating environment and fiscal regime," Energy and Resources Minister Bronwyn Eyre said. "We are also home to some of the best and most cost-effective conventional

oil and gas development opportunities you will find anywhere. It's not surprising that when we talk to audiences around the world about the investment opportunities in Saskatchewan, we are often talking about oil and gas."

Three leases posted in the Gull Lake area and prospective for oil in the Upper Shaunavon area were purchased for a total of \$527,384.24. Millennium Land (444) Ltd., Millennium Land (555) Ltd. and Canada West Land Services Ltd. each

purchased one of these leases.

The highest bonus bid was \$221,322.02 for 129,360 hectares located south of Gull Lake. This parcel, which also received the highest dollars per hectare at \$1,710.90 per hectare, was purchased by Millennium Land (444) Ltd. which was the top bidder in this public offering, picking up four leases totalling 912,976 hectares for \$416,196.81.

The scheduled date for the next public offering will be June 4, 2019.



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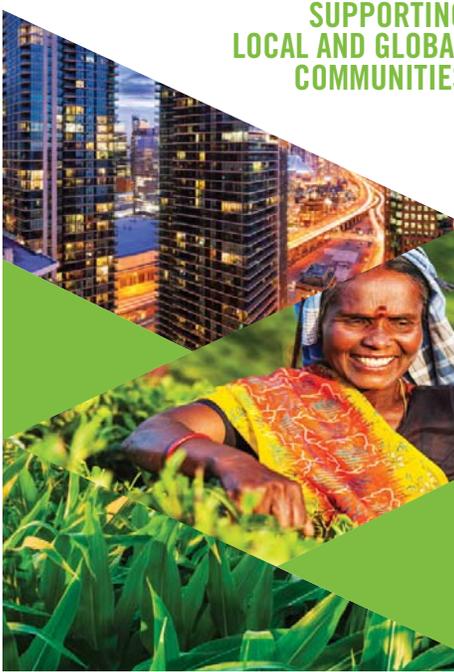
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Spring 2019

Mining, Energy & Manufacturing



Sask's April subsurface mineral public offering targets Estevan area

The Government of Saskatchewan's Subsurface Mineral Crown Disposition Public Offering held Tuesday, April 23, the first offering of the 2019-20 fiscal year, raised \$10,000 in revenue for the province based on interest in resource exploration in the Estevan area.

A single subsurface mineral permit block totalling 1,553.820 hectares was posted and received a bonus bid of \$10,000.

Deep Earth Energy Production Corp. was the successful bidder. The permit block is located along the Saskatchewan-North Dakota border, approximately 30 kilometres southwest of Estevan, an area that is prospective for brine minerals such as lithium.

"The public offering process helps facilitate exploration activity by Saskatchewan's mining industry for this specific class of minerals in an orderly, transpar-

ent way," Energy and Resources Minister Bronwyn Eyre said. "Enabling global access to our diverse resource potential will help sustain Saskatchewan mining in the long term."

Introduced in 2018, subsurface mineral public offerings use an open and competitive bidding system similar to the existing process for issuing periodic oil and gas dispositions in Saskatchewan. The system

covers all natural mineral salts and their compounds found more than 60 metres below the land surface. These include boron, calcium, lithium, magnesium, potassium (of which potash is a compound), sodium, bromine, chlorine, fluorine, iodine, nitrogen, phosphorus and sulfur.

The next scheduled date for a subsurface mineral public offering in Saskatchewan is December 17, 2019.

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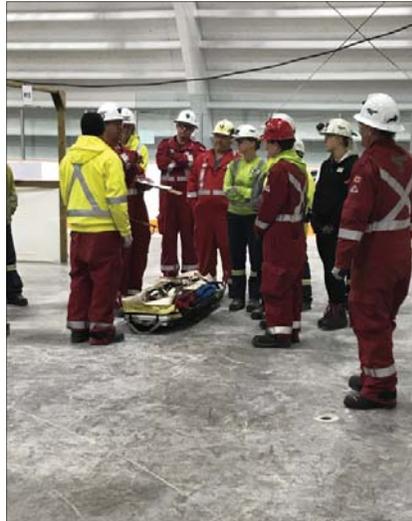


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Mosaic Esterhazy holds in-house mine rescue competition

Each year, prior to the provincial mine rescue competitions to prepare teams for the upcoming event. Mosaic at the annual Saskatchewan Mining Association Emergency Response/Mine Rescue Skills Competition. In April, Esterhazy's Emergency Response and Mine Rescue teams showcased their diverse skillset as they competed in Confined Space, Proficiency, First Aid and Mine Problem events.

The results from each event are as follows:

ESTERHAZY RESULTS

First Aid Winner (Combined): Team Lundgren

Fire Fighting Winner (Combined): Team Lundgren

Proficiency Winner: Team Lundgren

Confined Space Winner: Team Radford

Problem Winner: Team Chaban (Surface)
Team Lundgren (Underground)

Overall Winner: Team Lundgren (Underground)
Team Chaban (Surface)

Team Lundgren will represent Mosaic Esterhazy at the provincial competition on June 1 in Saskatoon.

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Exploration incentive boosts mining investment and activity in Saskatchewan

The Targeted Mineral Exploration Incentive (TMEI) is leading to increased drilling activity for base metals, precious metals and minerals in a defined target area near Creighton and creating tangible opportunities for future mining investment in Saskatchewan.

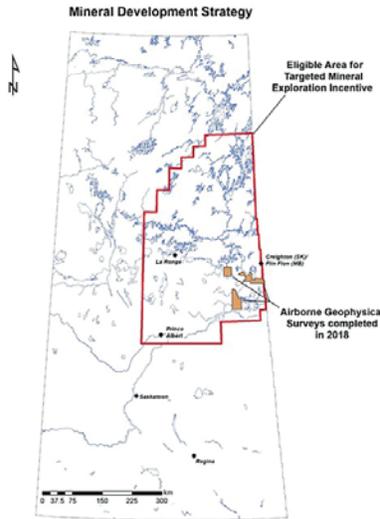
Developed in consultation with industry, TMEI is part of the Government of Saskatchewan's Mineral Development Strategy announced in 2017.

The 2019-20 Budget continues to support this strategy by providing the overall funding level for the TMEI program, which is established on an annual basis, to a maximum of \$750,000 per year. Seven successful applications were received for the 2018-19 incentive program, indicating a total of 110 new drill holes and proposed expenditures of more than \$6.5 million in the eligibility area. Some examples of metals and minerals being explored for include: copper, gold, nickel and zinc. Eligible companies will receive a grant of up to \$50,000 per year for drilling in the target area.

"The Mineral Development Strategy is about diversification and increasing our province's competitiveness in the mineral resources sector," Energy and Resources Minister Bronwyn Eyre said. "This exploration incentive will promote the discovery of new mineral resource opportunities, which in turn can generate jobs and economic benefits in northern Saskatchewan. Resource investors continue to find some of the world's best prospects for development right here in Saskatchewan."

The program has had other measurable impacts, including a net increase of more than 628,000 hectares of new mineral dispositions acquired and more than 600 downloads of raw data and maps of provincially-funded geophysical surveys, since its initial public release.

"New mineral discoveries are made by drilling," Saskatchewan Mining Association President Pam Schwann said. "By incentivizing on-the-ground investment for under-explored commodities, companies will progress Saskatchewan's rich and diverse mineral prospects into



tomorrow's mines. The targeted incentive program has already demonstrated an excellent return on investment and we are appreciative of the government's initiative to increase exploration investments for base and precious metals and diamonds."

"It has been difficult for junior exploration compa-

nies to raise capital for some time now," Forum Energy Metals Corp President and CEO Rick Mazur said. "The TMEI was a significant factor in our decision to drill our Janice Lake copper project. We knew in the long run the TMEI grant would reduce shareholder dilution. Our drill results confirmed our belief in the project, and successfully revived a base metal project that was dormant for 15 years. Hats off to the government's Mineral Development Strategy for implementing this program."

"MAS Gold Corp. is focused on gold exploration in the La Ronge Green Belt," MAS Gold Corp. Vice President of Exploration David Tupper said. "Thanks to Saskatchewan's proactive support of the mining industry, MAS Gold has been able to develop a strong exploration strategy built upon not only great geology, but also the very positive attitude and support of the government. It is good for both the company and our shareholders to be working with motivated experts, both government and private, excellent service companies and a supportive local workforce on our exploration programs."

The Mineral Development Strategy includes three components. In addition to the TMEI, the strategy increases the number of airborne geophysical surveys targeting an area of base metal potential west and southwest of Creighton/Flin Flon and Denare Beach and ground-based geological investigations in northeastern Saskatchewan by the Saskatchewan Geological Survey. Some of these are set to take place this summer. More information can be found at www.saskatchewan.ca/mineral-exploration-incentive.

More than \$3 billion has been spent on exploration in Saskatchewan since 2003. Exploration expenditures in the province in 2018 were \$228 million and are estimated to increase to \$280 million in 2019. Saskatchewan's mining industry generated \$7 billion in sales in 2018 and more than 30,000 people in the province owe their livelihoods, directly or indirectly, to the industry.



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Nutrien Rocanville and Mosaic Esterhazy:

Area home to the two largest potash mines in the world

BY KEVIN WEEDMARK
Many people realize that Nutrien Rocanville and Mosaic Esterhazy are two very large mines and two very stable anchors for the economy in southeast Saskatchewan and southwest Manitoba.

But a lot of people might not realize just how big the two mines are.

They are not only the two largest potash mines in Saskatchewan.

They are not only the two largest potash mines in Canada.

They are not only the two largest potash mines in North America.

They are the two largest potash mines in the world.

With nameplate capacities of 6.6 million tonnes of KCl (Mosaic Esterhazy) and 6.5 million tonnes (Nutrien Rocanville), the two mines are far larger than any other potash mines in operation.

Between the two mines there are almost 1,800 people directly employed.

ROCANVILLE THE LARGEST NUTRIEN MINE

Production at Rocanville doubled with the completion of the \$3 billion expansion. The Rocanville mine produced 2.48 million tonnes of KCl in 2015, 2.72 million tonnes in 2016, and 4.86 million tonnes in 2017.

In 2017—before the merger that created Nutrien—Rocanville produced about half of the 9.8 million tonnes of potash produced by the five

2017 Muriate of Potash Capacities and Locations

(’000 metric tonnes of KCl per year)

	Company	Site	Capacity
Canada	Nutrien	Allan, SK	4,000
	Nutrien	Cory, SK	3,000
	Nutrien	Lanigan, SK	3,800
	Nutrien	Patience Lake, SK	300
	Nutrien	Rocanville, SK	6,500
	Nutrien	Vanscoy, SK	3,024
	Nutrien	Sussex, NB	2,000
	Mosaic Company	Belle Plaine, SK	3,400
	Mosaic Company	Colonsay, SK	2,600
	Mosaic Company	Esterhazy, SK	6,600
Total Canada			35,224
United States	Intrepid Potash	Carlsbad (West), NM	380
	Intrepid Potash	Carlsbad (HB), NM	165
	Intrepid Potash	Cane Creek, UT	100
	Intrepid Potash	Wendover, UT	90
Total United States			735
Total Canada and United States			35,959

other two Mosaic mines in Saskatchewan combined.

ROCANVILLE, ESTERHAZY HAVE MORE POTASH PRODUCTION CAPACITY THAN MOST COUNTRIES
Between Nutrien Rocanville and Mosaic Esterhazy, this area has more potash production capacity than any country outside Canada.

Between Nutrien Rocanville and Mosaic Esterhazy, this area has 13.1 million tonnes per year of potash production capacity, helping make Canada the world’s largest producer of Potash.

The number two country in the world for Potash production is Russia, which produced 7.2 million tonnes in 2017, less than the capacity of the two potash mines in this area.

PotashCorp mines in Saskatchewan.

ESTERHAZY THE LARGEST MOSAIC MINE
Mosaic Esterhazy is the

largest of the three Mosaic potash mines in Saskatchewan.

Mosaic has a nameplate capacity of 6,600 tonnes of potash, more than the

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Canada's upstream oil and gas sector is in intensive care

Canadian oil and gas companies face major problems, in great part due to government policy.

Legal restrictions on the expansion of pipeline capacity have restricted exports of oil, shrinking profit margins. The subsequent price decline for Western Canada Select oil spurred former Alberta premier Rachel Notley to temporarily reduce the production of raw crude oil and bitumen starting on January 1, 2019.

What's perhaps less appreciated, at least outside oil-producing regions of Canada, is the extent of economic damage to the energy industry due largely to government regulatory and tax policies, as manifested by reduced rates of capital investment in the upstream oil and gas sector (essentially exploration and production) and the increasing abandonment of oil drilling sites.

By way of illustration, as recently as 2014, oil and gas extraction accounted for around 28 per cent of total industry capital expenditures in Canada compared to around 14 per cent in 2018. This decline is particularly striking given that total business investment in Canada in 2018 was around 10 per cent less than 2014 levels.

The consequences for the Canadian economy, and in particular for the provincial economies of

Alberta and Saskatchewan, are also perhaps under-appreciated. The oil and gas sector contributes, directly and indirectly, around eight per cent of Canada's gross domestic product (GDP), almost 30 per cent of Alberta's GDP and slightly more than 23 per cent of Saskatchewan's GDP.

Exploration and production in the oil sands accounts for almost 80 per cent of the oil and gas industry's total capital expenditures. Obviously, it won't be easy for Alberta to replace the investment and income losses, which are due largely to federal government policies that suppress incentives for maintaining—let alone increasing—economic activity in the upstream oil and gas sector.

Ottawa's policies have been particularly damaging given that deregulation and tax reduction in the United States is help-

Steven Globerman and Joel Emes

ing dramatically improve the investment climate in the U.S. upstream oil and gas sector.

Unsurprisingly, oil and gas companies are moving their exploration and production activities from Canada to the U.S.

For the U.S., that meant capital expenditures in the upstream sector of the industry were around 41 per cent higher in 2018 compared to 2016.

In Canada, they were only about 15 per cent higher. Furthermore, drilling rigs in Canada comprised almost 15.6 per cent of total rigs operating in North America in 2018, a drop from around 20 per cent in 2016.

Numerous industry executives and investment

2018.

Conversely, major oil exploration and production locations in the U.S., most notably in Texas and New Mexico, were rated more attractive locations for investment in 2018 than in 2014.

In the absence of substantive changes to government policies affecting Canada's upstream oil and gas sector, it's difficult to foresee any abatement of the ongoing relocation of investment to the U.S.

It might well be that Canadian politicians and

policy-makers believe this trend to be in the country's best interest given other national priorities, including environmental protection.

In this case, politicians have a moral obligation to inform Canadian voters about the major regional, industrial and occupational readjustments that a continuation of current policies will impose on the economy.

Steven Globerman and Joel Emes are senior fellows at the Fraser Institute.

DR. NATHAN KNEZACEK, OD

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Pipeline shortage cost Canada's energy sector \$20.6 billion in 2018

With pipeline shortages driving down the price of Canadian oil, the losses for the energy sector—and for Canada's economy—are staggering.

According to a new study, insufficient pipeline capacity cost Canada's energy sector \$20.6 billion—or one per cent of the country's economy—in foregone revenues last year.

Despite increased oil production in recent years, Canada has been unable to build any new major pipelines. High-profile projects including the Northern Gateway and Energy East projects have been cancelled. And the Trans Mountain expansion, Line 3 replacement and Keystone XL pipeline remain mired in delay.

Take the Trans Mountain pipeline expansion project, for example. After years of regulatory delays and political interference, the project's future remains uncertain. The proposal to expand the existing Trans Mountain pipeline between Edmonton and Burnaby, B.C., was first approved in 2016. However, the Federal Court of Appeal rescinded that decision last year, ruling that neither the environmental review nor the Indigenous consultation were properly completed.

And despite a revised National Energy Board ruling that deemed the project in the public interest, the B.C. government continues to oppose the project and is pursuing legal means to block the expansion.

Such delays and political opposition raises serious concerns about whether the pipeline will ever be built.

So what are the consequences of all these delays? How is insufficient pipeline capacity affecting our economy?

We have an overdependence on the U.S. market, in-

**Elmira Aliakbari
and Ashley Stedman**

creased reliance on more costly modes of energy transportation, and rising oil inventories in Western Canada.

Producers are shipping their crude by rail, a higher-cost mode of transportation (and less safe—pipelines are 2.5 times less likely to experience an oil spill than rail transport). Higher rail rates are absorbed by Canadian oil producers, leading to lower profits for Canadian crude and a wider price differential between Western Canada Select (WCS) and U.S. crude West Texas Intermediate (WTI).

It hasn't always been this way. Between 2009 and 2012, the price differential was roughly 13 per cent of the U.S. crude price. And that difference was seen by producers as one of the costs of doing business in Canada.

But recently, this price difference has skyrocketed. In November 2018, the price differential reached almost 70 per cent of the U.S. crude price, meaning Canadian heavy oil was sold at only 30 per cent of the value of U.S. oil.

In addition to the negative impacts on oil producers, these high price differentials result in lower-than-expected royalties (the government's cut of every barrel produced) and lower corporate income tax revenue for energy-pro-

ducing provinces and the federal government.

This is revenue that could have been used for vital services such as health care and education and/or reduced taxes.

In response to the drastic price discount, in late-2018 the previous Alberta government introduced a temporary production limit on oil producers in an attempt to address excess supply and insufficient export capacity.

Since this limit was implemented, the price differential has narrowed. But clearly, building new export pipelines remains the only long-term solution to ensure Canada's valuable exports receive prices closer to world market prices.

The real issue is that Canadian heavy oil producers lost a staggering \$20.6 billion in foregone revenues last year compared to what other producers of similar products received.

That's roughly one per cent of our economy lost because we can't deliver our product to international markets to secure better prices. This loss of revenue means less investment, less job creation and ultimately less prosperity for Canadians.

Unless Canadians are willing to continue to incur large losses and less investment, the federal government and several key provincial governments must co-operate to get pipelines built.

Elmira Aliakbari is associate director of natural resource studies and Ashley Stedman is a senior policy analyst at the Fraser Institute.



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Spring 2019

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Mining permit waits hamper Canadian development

Every year, the Fraser Institute publishes a survey of senior mining company executives that assesses policy environments around the world and the mineral potential of jurisdictions. Those two components are used to create an investment attractiveness index.

One thing miners repeatedly tell us is that they're concerned about obtaining exploration permits: how long does it take, how certain is the process, how transparent is the process, etc.

That's why, for the last several years, the Fraser Institute has included a sub-survey examining permit times in Canada, Australia and the United States.

In the 2018 survey, 150 managers and executives (with 65 per cent from exploration companies) answered the permit-time component of the larger mining survey. These responses allowed eight Canadian jurisdictions to be assessed: Ontario, Quebec, Manitoba, Saskatchewan, British Columbia, Yukon, the Northwest Territories and Nunavut.

Most exploration permits can be obtained within six months, but some provinces can take significantly longer. Twelve per cent of applicants in B.C., for example, waited 15 to 18 months to receive a permit to explore. In Nunavut, 12.5 per cent of applicants were also kept waiting for 15 to 18 months, as were 9.5 per cent of respondents from Yukon.

The clear winner on swift permitting was Saskatchewan, with 100 per cent of respondents receiving permits in six months or less.

Among the three provinces that attract the majority of Canadian exploration spending on base metals and precious metals—B.C., Ontario and Quebec—the results are mixed.

For example, in Quebec (45 per cent) and Ontario (28 per cent), a higher percentage of respondents indicated they expected it to take two months or less to acquire necessary exploration permits compared to only nine per cent of respondents in B.C.

In fact, B.C. underperforms all of its competitors in Canada on timeliness, with the lowest percentage of respondents (45 per cent) among the three provinces indicating they expected to spend six months or less acquiring the necessary



Kenneth Green

permits.

The permit time survey also looked at whether things were taking less time or taking longer. Canadian jurisdictions reported lengthening wait times over the last 10 years, with 65 per cent of respondents from B.C., Manitoba, Nunavut, Ontario and Yukon reporting lengthened timelines. The Northwest Territories, Quebec and Saskatchewan reported shortened permit times or that they basically stayed the same over the past decade.

The last component of the permit time survey is the question of timeline certainty (or uncertainty). Respondents were asked how often their jurisdiction met its own established timelines/milestones for permit approval decisions.

Half or more of the respondents to this question in B.C., Nunavut and Manitoba reported their permitting authority failed to meet its established timelines about half the time.

Again, Saskatchewan has bragging rights, with all respondents reporting that the official timelines and milestones were met between 80 and 100 per cent of the time.

Exploration is the critical first stage in mining development. Long and uncertain permitting processes risk gumming up the process. As the Prospectors and Developers Association of Canada (or PDAC) observes, exploration projects are the "headwaters" of the mining industry. Broad exploration is important, since "out of a thousand exploration projects, only one might eventually turn into an operating mine."

The Fraser Institute survey offers mining regulators a roadmap to improve their permitting processes and accelerate exploration in their jurisdictions. For the sake of finding future mines, regulators should pay close attention to what miners are telling them.

Kenneth Green is a Fraser Institute analyst.

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Spring 2019 Mining, Energy & Manufacturing



Manitoba oil industry facts

Manitoba has two potential areas for oil and gas production, southwest Manitoba and the Hudson Bay lowlands.

Oil was discovered in Manitoba and has been produced since 1951.

Manitoba's current oil production is located in southwest Manitoba along the northeastern flank of the Williston Basin, a sedimentary basin that also occupies portions of southern Saskatchewan, North Dakota, South Dakota and Montana.

Potential hydrocarbon bearing-formations in southwest Manitoba occur to depths of up to 2 300 metres (7,500 feet).

The majority of the approximately 8,500 wells drilled in Manitoba have only been drilled to Triassic, Mississippian or to the Bakken; this represents approximately one half of the potential hydrocarbon bearing formations.

Production in 2015 was 2,685,255.3 m³ or 16.9 million Barrels. The month of January 2015 had the highest production at 255,242.3 m³ (1.6 million Bbls) or 51,813 Bbls per day.

There is over 76 kilometers of core from wells drilled in Manitoba available for examination.

All pre-1980 oil production originated from Mississippian Lodgepole and Mission Canyon formations at depths that range from 600 to 1 050 metres (2,000 to 3,500 feet). These formations accounted for approximately 68 per cent of Manitoba's cumulative oil production.

Oil was discovered in 1980 above the Mississippian in the Triassic Amaranth Formation. Approximately 21 per cent of Manitoba's 2015 production originates from the Amaranth Formation in the Pierson-Waskada area.

In 1985, oil was discovered in the Bakken Formation in the Daly area.

In 1993, oil was discovered in the Jurassic Melita Formation in the St. Lazare area.

In 2004, oil was discovered in the Devonian Three Forks Formation in the Daly Field, marking Manitoba's first pre Mississippian Production. In 2015, it accounted for 40% of Manitoba's oil production.

As of December 31, 2015, Manitoba oil fields have produced a total of 89.27 million m³ (561,772,840 Bbls)

of oil.

The oldest producing well drilled in Manitoba is Daly Unit #3 Prov. 7-12-10-28 which has produced since July 1951. Manitoba's most productive well is 2-21-11-26W1 in North Virden Scallion Unit No. 1 which has produced 2.03 million barrels of oil since June 1955.

As of December 2015,

there were approximately 3,811 producing oil wells in Manitoba, 1648 of which were put on production since January 1, 2006.

Currently there are 13 designated oil fields and 181 producing oil pools in southwest Manitoba.

Manitoba's crude oil production is equivalent to approximately 43 per cent of

the province's refined petroleum products requirements.

Approximately 13.4 million m³ (84.6 million barrels) of salt water were produced in 2015, that's 5.0 m³ of salt water for every 1 m³ of crude oil produced. Salt water must be separated from the oil and re-injected into subsurface formations.

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Saskatchewan oil facts

Saskatchewan is number two in the amount of oil produced among Canadian provinces, accounting for 13 per cent of Canada's oil production.

Saskatchewan's oil and natural gas development can be traced back to the 1880s with natural gas drilling near Regina. The first commercial oil well was discovered in Lloydminster in 1943.

Saskatchewan has about seven billion barrels of crude oil and about 9.5 trillion cubic feet of natural gas. Following are a few figures on Saskatchewan oil production:

- 486,000 barrels per day - Saskatchewan oil production in 2015.
- \$750 million - payments industry made for the use of Saskatchewan's oil and natural gas resources in fiscal 2015/16
- \$4.4 billion - industry spending on exploration and development in 2015
- 33,000 - person years of direct and indirect employment by the industry in 2015
- 1.8 Trillion cubic feet - remaining marketable natural gas reserves at 2014
- 1.0 billion - barrels of remaining crude oil reserves at 2014
- 29,200 - number of producing oil wells in 2015

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EXHIBITION SCHEDULE

TUESDAY JUNE 4	<p>EXHIBITOR GOLF TOURNAMENT</p> <ul style="list-style-type: none"> 6:30 a.m. Morning Golf Registration & Breakfast (exhibitors) Sponsored by: Badger Daylighting Location: Weyburn Golf Club 7:30 a.m. Shot Gun Start - Morning Flight Courtesy Rides sponsored by: Baker Hughes 12:00 p.m. Exhibitors Brunch & Registration Sponsored by: NOV Completions Tools 1:00 p.m. Shot Gun Start - Afternoon Flight Sponsored by: Baker Hughes 	<p>2019 MEET & GREET KICK-OFF SUPPER</p> <ul style="list-style-type: none"> 7:00 p.m. Steak & Lobster Dinner Sponsored by: Gilliss Casing Services Location: Weyburn Curling Rink Entertainment: Forget Focal Point Music <p>11:00 P.M. - GROUNDS CLOSE</p>
WEDNESDAY JUNE 5	<p>OPENING CEREMONIES</p> <ul style="list-style-type: none"> 9:45 a.m. Opening Ceremonies/Chain Cutting with City of Weyburn Mayor Marcel Roy Location: Crescent Point Place <p>10:00 A.M. - SHOW OPEN</p> <ul style="list-style-type: none"> 12:00 p.m. Luncheon: Attendance is FREE Registration is available online or at the show Location: Weyburn Curling Rink Sponsored by: Crescent Point 12:15 p.m. Premier Scott Moe Location: Weyburn Curling Rink 12:30 p.m. 2019 Saskatchewan Oil & Gas Recognition Awards Presented by: The Weyburn Oil Show Board Location: Weyburn Curling Rink 	<p>GUEST SPEAKER</p> <ul style="list-style-type: none"> 2:00 p.m. Guest Speaker: VIVIAN KRAUSE Sponsored by: Carson Group & Alchem Energy Services Location: Weyburn Curling Rink <p>PRIME RIB DINNER</p> <ul style="list-style-type: none"> 7:00 p.m. Sponsored by: Finning Canada Location: Weyburn Curling Rink <p>AWARDS CEREMONY</p> <ul style="list-style-type: none"> 8:30 p.m. Awards Ceremony (Saskatchewan & Southeast Oilman of the Year) Presented by: The Weyburn Oil Show Board Location: Weyburn Curling Rink
THURSDAY JUNE 6	<p>SHOW OPENING</p> <p>9:00 A.M. - SHOW OPEN</p> <ul style="list-style-type: none"> 12:00 p.m. Industry Luncheon Location: Weyburn Curling Rink 	<p>GUEST SPEAKER</p> <ul style="list-style-type: none"> 12:30 p.m. Guest Speaker: REX MURPHY Sponsored by: Valleyview Petroleum & Panther Drilling Location: Weyburn Curling Rink <p>3:30 P.M. - GROUNDS CLOSE</p>

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