

OPI NEWSLETTER

THE VOICE OF THE ONTARIO OIL AND NATURAL GAS INDUSTRY

WINTER 2018

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Encouraging responsible exploration and
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The OPI's 56th Annual Conference – EPEX 2018 is scheduled at the DoubleTree by Hilton, London, Ontario on May 14 – 15. Registration is available online at

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Message from the Executive Director

It's encouraging to see that the early days of 2018 has seen a steady rise in the price of oil. As I write this message oil is at \$63.95/barrel. Let's hope this bodes well for a good year for Ontario oil and natural gas exploration and production.

The 2018 OPI Board of Directors, elected at the OPI Annual General Meeting in October, 2017, welcomed two new Directors: Mike Dorland, Consulting Geologist, and Ben Barnes, Double B Well Services Ltd.

The Board goes into 2018 with optimism and a continued focus on tackling a list of industry challenges. The industry is at an important crossroad as it works to regain its footing. Topping the list is the on-going decline in production compounded by the fact that for two consecutive years there have been no new exploration drilling starts.

In 2018 the OPI's objectives will again concentrate on working with the Government of Ontario to support exploration, promoting the province as a profitable exploration and development opportunity, and concentrate on keeping members informed and the public educated on developments in the Ontario oil and natural gas industry.

There is no question that the Government of Ontario is on a dedicated track with its climate action plan and cap and trade program as clearly demonstrated by the 2017 Ontario Long-Term Energy Plan, released last fall, which failed to provide any indication for the future development of the Province's for oil and natural gas resources.

In its interactions with the Government of Ontario the OPI will need to streamline its message on such specific areas as economic development and taxation to emphasize to the Government that there will continue to be a requirement for hydrocarbons in the future..

In promoting the "Ontario Advantage" for developing natural resources it will also require an altered approach. In previous years the OPI, at conferences throughout North America, promoted the various advantages in the Ontario patch: long-life reserves, high margins, and an experienced workforce. While all of those advantages remain the industry's recovery will ultimately come from having drill-ready plays to attract investors.

The Board of Director committees will be active in 2018. The Historical Producers Committee is working on recommendations to improve their capability to sustain production in historical oil fields, the Conference Committee is planning for some exciting changes to the 2018 OPI Conference, the Producers Committee will be active addressing issues related to exploration and production, the Membership Committee is reviewing ways to expand membership, the Tax Committee will be discussing ideas on bringing fairness to the taxation of industry assets, the Research, Education and Environment Committee will look for opportunities to educate audiences on the industry, and the Governance Committee is formalizing a proposal on the OPI By-laws.

The Ontario Oil, Gas and Salt Resources Library embarks on 2018 with considerable momentum from a successful 2017. The Library will continue to develop and expand its client base by supporting oil and natural gas exploration, drilling and production, develop for multi-year research opportunities with existing partners provide the most up-to-date GIS services and products

Thank you to the 2017 OPI Board of Directors for their commitment to the mission of the OPI. A thank you and an appreciation to retiring Directors Terry Marsh, T. Marsh Well Drilling & Servicing, and Ian Veen, Black Creek Well Service for serving on the Board. I look forward to working with the 2018 Board of Directors and members to support the oil and natural gas production, hydrocarbon storage and solution mining industries of Ontario.

Please enjoy this issue of the OPI Newsletter and please contact me anytime at 519-630-4204 or at hughmoran@ontariopetroleuminstitute.com.

Hugh Moran, Executive Director

OPI Talking Points

OPI-MNRF Hydrocarbon Sector Working Group

The Working Group has completed its review of a list of industry topics that include suspended well policy, inspector protocols, historical standards, well abandonment standards, well approval process, examiner protocols, and private gas well policy. The final reports were submitted by the Working Group and various Sub-Groups made-up of industry and government members. The recommendations include

MNRF Petroleum Operations Section – Industry Open House

The OPI attended the Ontario Ministry of Natural Resources and Forestry (MNRF) Petroleum Operations Section Industry Open House on November 16th at the Stoneridge Inn and Conference Centre in London. The

event was well attended and provided a good opportunity for the industry to gain an understanding of the MNRF as the industry regulator as well a collaborative partner.

OPI submits comments on cap and trade program – Offset Credits: Oil and Natural Gas

The OPI has responded to the Ministry of the Environment and Climate Change request for comments on regulations that would enable the creation of offset credits for use in Ontario’s cap and trade program. The oil and natural gas sector’s capability to develop offset credits will benefit the province’s cap and trade program as well as provide the industry with the opportunity to generate revenue through the sale of the offset credits.

Compressed Air Energy Storage

The OPI has commented on the Ontario Governments proposal to establish a regulatory framework under the under Oil, Gas and Salt Resources Act with respect to the use of wells and underground geological formations for compressed air energy storage (CAES). The OPI views the development of CAESs as an enhanced use of the geology of Ontario and in particular maximizing the benefits of years of oil and natural gas exploration and production in the province which has resulted in the availability of porous rock reservoirs where production has expired but valuable space remains.

OPI an Intervenor in OEB Hearings

The OPI is an Intervenor in hearings being held by the Ontario Energy Board (OEB). EB Hearing 2017-0306 is on an application from Enbridge Gas Distribution Inc. and Union Gas Limited for approval to amalgamate to form a single gas distribution, transportation and storage company. EB Hearing 2017-0224/0255/0275 are applications from Enbridge Gas Distribution Inc., Union Gas Limited and EPCOR Natural Gas Limited Partnership for approval to recover the costs associated with their 2018 cap and trade compliance plans.

Safety and Innovation Go Hand-in-Hand with Pipe Viper Technology

Union Gas continuously seeks new and innovative ways to safely and reliably deliver natural gas to its customers. Their ongoing search for technological advancement is one driven by efficiency, effectiveness, and of course, safety. As a company dedicated to the sustainability and growth of the natural gas industry, they feel it's important to support companies and technology that can further benefit employees and customers while remaining dedicated to environmental and personal health.

As part of its focus on safety and reliability, Union Gas inspects assets on a regular basis, such as their natural gas pipelines. The company actively identifies, removes and replaces outdated natural gas pipe.

When conducting this work, Union Gas is aware that outdated pipes and their coatings may contain hazardous contaminants such as asbestos and PCBs. The traditional method to remove old pipe coatings is called “media blasting” – a process which uses air pressure tools. However, this runs the risk of contaminants becoming airborne which can pose a health risk to employees working in the area and could potentially spread to surrounding areas, putting others at risk. Whether in terms of personal or environmental safety, Union Gas is committed to ensuring all of its worksites are safe, and that environmental integrity is preserved.

Union Gas has recently adopted a new technology that will replace media blasting called Pipe Viper, which is proving to be safer for employees and the environment. Pipe Viper is a cost effect, portable, self-contained system which uses ultra-high pressure water to strip and remove the coating from pipe, while a high powered vacuum gathers any material that is removed. It then filters the contaminants in a closed-loop system and stores the resulting waste product in a completely isolated unit. (Figure 1)



Figure 1: Pipe Viper Self Contained System

According to Shawn Khoshaien, director, Engineering at Union Gas, Pipe Viper technology significantly reduces exposure risks associated with coating removal. Rather than using hand tools which can cause ergonomic strain, workers simply have to install Pipe Viper hardware onto the pipe and allow the self-driving system to complete the coating removal. An added benefit is its ability to limit the number of people required to complete the job while also minimizing the strain on an individual's body. (Figure 2)



Figure 2: Pipe Viper machine stripping old pipe leaving behind a smooth pipe with no coating on the surface

This new technology is offered through Automatic Coating Limited (ACL), located in Scarborough, Ontario. ACL is well known in the industry, as the company operates state-of-the-art equipment and processes for liquid, powder, shop and field-applied coatings in both Canada and the United States.

David Primorac

External Communications & Media Relations Specialist
Public Affairs
Union Gas Limited | An Enbridge Company

Can Canada remain an ‘energy superpower’?



A decade ago, Canada was being touted by political leaders and media commentators as an "energy superpower." Does that description still fit today – and will it be appropriate tomorrow?

It goes without saying that energy is a key part of the Canadian economy. It represents about 10 per cent of GDP and one-fifth of exports. Canadian oil production has grown by around 50 per cent in volume terms over the past decade – driven by oil sands investment and production – although natural-gas production has softened. Canadian exports of oil, natural gas and low-carbon electricity are very much in demand in the U.S. market.

But the energy game is changing. Four factors are going to challenge Canada's future status as an energy power.

Factor 1: Ample new sources of oil and natural gas supply. Arguably the most striking story of new energy supply is happening not in the traditional Organization of Petroleum Exporting Countries but right next door in the United States. U.S. production of both oil and natural gas has grown significantly over the past decade. Sophisticated technology – specifically the combination of fracking and horizontal drilling – has allowed oil and gas trapped in porous rock to be extracted economically. While Canada has grown its share of U.S. oil consumption at the expense of OPEC producers, U.S. domestic natural-gas production has slowly crowded out Canadian gas exports. And whenever prices creep upward a bit, the U.S. energy industry appears able to respond quickly with new and efficient investment, and increased production.

Factor 2: Structurally weaker prices for oil and gas. Oil prices have recovered after collapsing two years ago, but appear to be constrained at around \$50 a barrel – half of what they were in mid-2014. Natural-gas prices are largely determined regionally; prices in North America have been moderated by the structural changes in U.S. gas production. Oil and gas prices may improve a bit into 2018. But earnings for many Canadian energy producers have already been hit hard, cushioned partially by a floating loonie.

Factor 3: Inadequate access to global markets. Thanks to emerging markets, global demand for oil and gas is robust and still rising – but Canadian suppliers are unable to take advantage. They have little pipeline access to global energy markets, and possible new pipeline projects have to run the gauntlet of regulatory approval with many conditions set, and local politics. The inability to access global markets has hurt sales prices for Canadian oil and gas producers for decades, with significant North American price discounts. Shipping by rail is an alternative, but it is more expensive and more dangerous.

Factor 4: The transition to a low-carbon economy. The low-carbon transition now under way represents a fundamental, long-term structural change in how the world will consume and produce energy in the decades ahead. The U.S. withdrawal from the Paris climate accord may slow the adjustment a bit, but other actors such as the European Union and China are not likely to change course.

Although there is no single pathway to a lower-carbon economy, there are many signs of changes to come. Global targets have been set for reductions in greenhouse gas emissions. Carbon pricing is in effect, both in Canada and elsewhere. Countries and auto producers have announced their intention to shift toward low-emission vehicles, although they still represent a very small share of the global market. Electricity producers are eliminating coal and shifting to natural gas as an input, as well as developing renewables and reconsidering nuclear as a low-carbon power source.

What can the Canadian energy sector do to adapt to this coming reality? Energy producers can start by setting an ambitious goal – to become the most-efficient low-carbon source of oil and gas production, certainly in North America. The sector could continue to build and sell expertise across the entire energy value chain.

Beyond production and extraction, there is money to be made in energy construction and a wide range of specialized energy services, from research to finance. A full array of lower-carbon energy management alternatives can continue to be developed, including carbon capture and storage, nuclear energy and innovative energy-storage options. Public policy should be designed to support all three elements of a low-carbon energy strategy.

Canada could become a "clean-energy superpower" if the low-carbon transition is embraced and acted upon. But if we can't adapt, Canada's energy industry will be hard-pressed to maintain its stature in the decades ahead.

*Glen Hodgson, Economist and a Senior Fellow, Conference Board of Canada
Special to The Globe and Mail, September, 2017*

Canada needs a frank discussion about resources

As Canadians, let's be honest with each other. After TransCanada announced Thursday that the Energy East Pipeline is dead, we need – now more than ever – to honestly address this fundamental question: How does Canada work?

We can't build a country without building something. We will not maintain our standard of living if we continue to lose our edge.

First, the wealth of a country is created by the sweat, toil and creativity of Canadians. They turn assets into something of value that can be sold to create wealth. Sometimes these are assets such as oil, natural gas or lumber. Sometimes these are virtual assets, such as insurance, banking or software. Success leads to taxes paid to local, provincial and federal governments.

Taxes are used by governments to pay for our much valued, quality public services: health care, education, roads, etc. Taxes only get paid when there is successful enterprise first. Taxes are paid by employed Canadians and by successful companies. Period.

How have we not been honest with each other? We have enabled a myth to take root and grow. The myth is that we are so wealthy as a nation that we can afford to ignore our natural strengths. We can reap the rewards of being a first-world country without the hard work that got us here. Tax income will arrive on a magic ship full of rainbows and unicorns.

Let's remember what got us here. People saw opportunities, they took a crack at trying to exploit those opportunities. They created businesses, hired people. They moved with speed. They learned that opportunities aren't there forever.

The recent decision by Petronas to cancel its proposed LNG project in British Columbia is a painful case study. I have particular insight into that lost opportunity, because I met with the leadership of Petronas as Alberta's minister of energy when they came to Canada in 2012 and purchased Progress Energy for \$6-billion. It was made clear to me that the \$6-billion spent on Progress was a down payment on a long-term investment in Canada, expected to reach \$70-billion.

Fast forward to 2017, and Petronas has invested some 10 per cent of that sum; it is unlikely that more will be invested by that company.

What is the value of a lost investment of \$60-billion to citizens? I don't know for certain, but it is at least one large regional hospital, costing more than \$1.4-billion to build, and nearly a billion to operate every year for 50 years, serving hundreds of thousands of Canadians. In short, it is a lot of public services.

How did we get here? There is plenty of blame to go around, but one aspect is industry and government being tone deaf and numb to their obligations to First Nations and communities. Regulatory burden and uncertainty is another. A lack of a real and clear commitment by governments, both federal and provincial, is another.

Meanwhile, the window of opportunity for Canada to export our immense reserves of natural gas to the world just evaporated. That ship has sailed. That kind of opportunity doesn't show up very often, even in a country as wealthy as Canada.

Let's be honest. We need to develop some of our resources to maintain our quality of life. We need to have good jobs for people to allow the tax system to collect public money. We need to strip our regulatory agencies down to the core functions, not add to uncertainty. We need to use our knowledge of science to do things as well as they can be done. We need to set tight time frames to approve projects, and force the regulators to meet those timelines. That doesn't mean a compromise on climate and the environment. But we are either in the business of building a country or we are not.

If we don't want pipelines or resource development in Canada, then we have to be honest about it and acknowledge that business will go elsewhere, with major consequences.

We are really good at what we do as a country, which is why people want to move here. We are among the luckiest people in the world. But good is not enough. The quality of our health care and other essential services will suffer if we don't realize that public money doesn't come easily or freely.

The world really does need more Canada. Canada just needs to focus and get its act together.

*Ken Hughes, former Alberta Minister of Energy, Founding Chair of Alberta Health Services, and Honourary Chief, Blackfoot Confederacy
Globe and Mail, October, 2017*

Canadian energy-storage startups get global traction

Something unexpected is happening in India. Utilities that used to sign 25-year contracts to purchase coal-based electricity are beginning to get nervous.

They're still buying the dirty power. The difference now is that they won't get locked into a contract longer than 10 years, believing that energy storage combined with inexpensive solar and wind power will soon become more economical than the coal-fired equivalent.

"The interest there right now in energy storage is just huge," says Himanshu Sudan, president of Toronto-based battery-system provider eCamion. "Not a day goes by that we don't get an e-mail from an Indian business that wants to work with us. Right now, we're not able to keep up with the volume of requests."

India has pledged to triple the amount of renewable energy on its grid by 2022, and by 2027 expects renewables will overtake coal as the dominant source of power. It also wants to go big on electric vehicles, including an outright ban on the sale of gas and diesel-fuelled cars that's supposed to kick in by 2030.

But Mr. Sudan says the country's grid is so fragile that it won't achieve those ambitious targets – inspired in part by its commitment to the two-year old Paris climate-change agreement – without embracing energy storage on a large scale.

Energy storage is critical for the growth of renewables because, simply put, the wind doesn't blow all the time and the sun doesn't always shine. The only way to get much larger amounts of renewables reliably into a country's electricity mix – and give coal the boot – is to capture that clean energy when it's available, and dispatch it when it's needed most. A wide range of technologies can be used to store and manage this energy, everything from big batteries and flywheels to fuel cells running on renewable hydrogen and systems based on compressed air or pumped water.

It's a market reality not unique to India, and Canadian energy-storage startups stand to benefit. A recent report from Bloomberg New Energy Finance projects that the global market for energy-storage technologies will double six times between now and 2030, leading to investment of more than \$100-billion.

"This is a similar trajectory to the remarkable expansion that the solar industry went through from 2000 to 2015," according to the report.

Pension funds and sovereign funds are starting to get in on the action. NRStor, the Canadian energy-storage developer, recently secured a \$120-million debt facility from Swiss-based investment house SUSI Partners AG to help fund industrial and commercial storage projects. That follows a deal with the Labourers' Pension Fund of Central and Eastern Canada, which has committed up to \$200-million in project capital to NRStor.

More capital flowing to energy storage and renewables means less investment in new thermal-power plants, a trend that's already starting to hit big equipment suppliers such as Siemens and General Electric.

Siemens, for example, recently announced plans to cut nearly 7,000 jobs in its power and gas division, which sells turbines and other equipment for thermal-power plants. One board member went so far as to describe the market as "burning to the ground."

The move away from coal and conventional thermal-power generation is spreading. At the COP23 climate-change talks in Bonn, Germany, last month, Canada led a coalition of 20 countries that have committed to phasing out coal-fired generation by 2030, and the group aims to expand to 50 countries by next fall's climate meeting in Poland.

Canadian startups such as eCamion are pouncing. In Australia, where Elon Musk's Tesla just built the largest grid-connected battery system in the world in less than

100 days, the market looks so strong that Toronto-based Hydrostor is developing its first utility-scale storage plant.

Company CEO Curtis VanWalleghem says the project – an underground system that uses compressed air and water to store and dispatch power on demand – will lay the foundation for future expansion across the island continent.

"The value of energy storage is rising, and Canada is definitely in a good position," says Derek Lim Soo, founder and CEO of Peak Power, another Ontario-based company. Among its strategic investors is Osmington, a commercial real estate company controlled by David Thomson, chairman of Thomson Reuters.

Peak Power offers "energy storage as a service," using Big Data and machine-learning algorithms to manage how any energy-storage technology interacts with the grid and the consumption patterns of its customers. The idea is to help commercial-building owners lower their electricity bills and utilities bring more resilience and efficiency to their operations as more renewable sources are added.

Mr. Lim Soo says Peak Power has benefited from falling energy-storage costs resulting from the growth of electric vehicles and the related scale-up of lithium-ion battery manufacturing. His company already has projects on the go in New York and Massachusetts, and groups from Australia, India and Britain have reached out wanting to learn more.

"They all have the same issues – aging energy infrastructure, rising peak demand, the need to integrate more renewables," he says. "This area is going to boom."

Hydrogen storage is also getting a big bump as regions such as Europe and Asia turn to fuel cell technologies for both grid and transportation storage. Earlier this year, Mississauga-based Hydrogenics was contracted to supply 1,000 fuel-cell power modules for hydrogen buses in China. This followed a deal with Alstom to power the first hydrogen passenger train in Germany and supply technology for a hybrid wind-hydrogen power plant in Thailand.

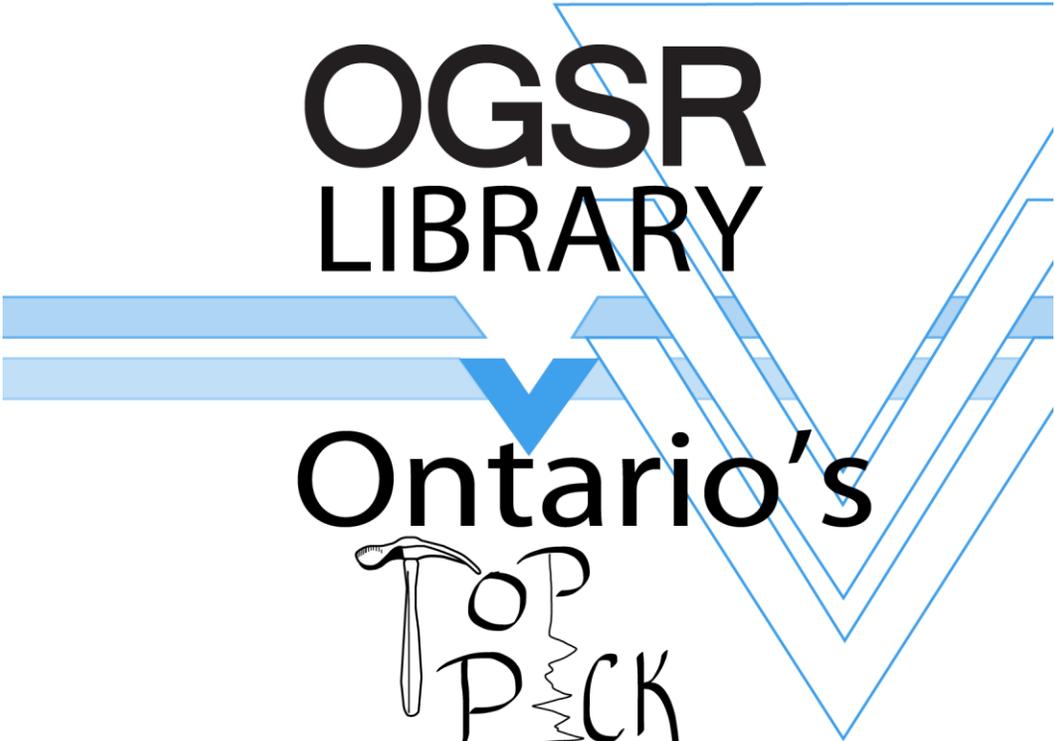
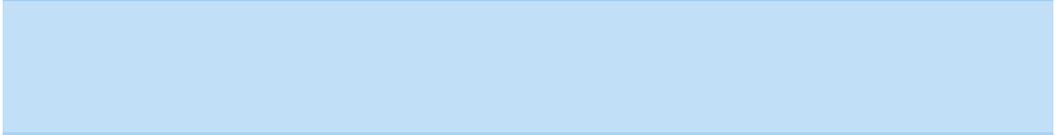
CEO Daryl Wilson says momentum is building, but cautions that Canadian companies won't reach their full potential overseas if they don't get stronger support, including better access to capital, within their own borders. "It's very critical to demonstrate success at home."

Tyler Hamilton works with cleantech companies from across Canada as an adviser with the non-profit MaRS Discovery District in Toronto.

*Contributed to The Globe and Mail
December, 2017*

Training Courses

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DoubleTree by Hilton, London

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June 13, 2018
Oakwood Resort, Grand Bend



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