

emissions of nitrogen oxides were cut by 79 percent and sulfur dioxide emissions by 86 percent, during a period when electricity use grew by 36 percent.

### Smarter energy infrastructure

As we think about our energy future, we must recognise the value that the energy grid delivers. As the backbone of the system, the grid efficiently delivers reliable and safe energy, so consumers always get the power they need, whenever they need it.

The continued deployment of digital smart meters – with more than 65 million installed in US households to date – is one key building block of a more dynamic and more secure energy grid. Investments that hasten the integration of new technologies, such as small-scale wind and solar, energy storage, microgrids and other devices in our homes and businesses, are another. The industry is projected to invest \$52.8bn in 2016 to enhance the energy grid and to further enhance grid security efforts.

Protecting the energy grid is the industry's top priority. Every day, the industry is working to improve grid security, reliability and resiliency. Security strategies are constantly evolving and are closely coordinated with government partners. By working together, industry and government greatly enhance response and recovery efforts following a major storm, as well as the ability to defend and protect against cyber and physical security threats.

### Energy solutions consumers want

Consumers today want more flexibility and

want to be more engaged with their energy use. Electric companies are changing the way they provide services to consumers and individualising those services – for large consumers, like data centres and major corporations, that want to use renewable energy; for residential consumers who want to manage their energy use with connected devices and through web-based platforms; and for major cities that want to be more sustainable and reduce their carbon footprint.

The industry also helps consumers save energy. It invested \$7.3bn in energy efficiency programmes in 2014. These investments avoided the generation of 107 million metric tons of carbon dioxide and saved enough electricity to power 14.7 million US homes for one year.

And, the industry continues to promote electrification in both on-road and off-road applications to support environmental goals, build customer satisfaction and enhance national security by using more domestic energy resources.

Last year, the industry further bolstered these efforts by launching a partnership with the Department of Energy that is identifying and pursuing collaborative opportunities between the government and the industry to promote and accelerate the nationwide adoption of electric vehicles.

### Getting the policies right

One energy technology that consumers are increasingly interested in is rooftop or private solar systems. Private solar offers an attractive

option for some consumers, and electric companies are actively examining ways in which these systems can be better integrated into the energy grid to enhance reliability, improve resiliency, reduce costs to consumers and to the grid, and improve the environment.

Policymakers across the country are encouraged to update current policies to ensure that everyone who uses the energy grid continues to share equitably in the costs of paying for the grid.

To ensure that electric companies can deliver the energy future consumers want and expect, it is critical that traditional generating sources work hand-in-hand with clean and renewable technologies, that a diverse energy mix is maintained, and that new technologies complement one another, instead of competing against each other.

At the end of the day, the more than one million Americans directly or indirectly employed by the electric power industry are committed to delivering safe, reliable, affordable and clean energy – and to using new technologies and leading change that maximises value to consumers. ■

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## Risks and challenges facing Canada's oil and gas industry: price volatility and the certainty of uncertainty

BY ALICIA QUESNEL

Predictions about economic recovery in global resources markets are plentiful – unfortunately, they are not particularly consistent. The only certainty about when and how recovery will occur and what recovery will look like is that it is uncertain. Hourly speculations about the factors that affect commodity prices (or speculations about the factors themselves) are fuelling a price volatility that is increasingly divorced from the underlying fundamentals. Right now commodity prices are less about the economic fundamentals of supply and demand and more about addressing financial market requirements, geopolitical concerns and the climate change imperative.

The impact of all of this on Canada's energy

sector has been profound, far reaching and unprecedented. What the industry looked like in 2014 is not what the industry looks like today, nor what the industry will look like tomorrow. The changes are many and varied and this article examines three of them: firstly, the flight of resource capital from Canada, secondly, the redefinition of the junior resources sector, and finally, the closing of the current window of opportunity to become a player in global LNG markets.

### Investment capital takes flight

Investment dollars in Canada's energy sector are moving south. Canadian products are constrained by a lack of access to markets outside

Canada. The US, once our customer, is now our largest competitor. Obtaining approval of new energy infrastructure projects in Canada, particularly pipelines, has become increasingly difficult; with the result being that access to more lucrative global and international markets is constrained. Until such access becomes available, Canadian products will continue to be subject to a discount on already low global and North American commodity prices.

In the meantime, investors and companies looking for growth in the energy sector have started to reallocate their investment capital from Canada's energy sector into international markets. Encana Corporation started looking south in 2014 with its US\$3.1bn Eagle Ford ▶▶

acquisition, and since that time, its acquisition of additional US natural resources assets and its disposition of significant Canadian resources assets. And it hasn't looked back. In August 2015, Canada Pension Plan Investment Board, a significant investor in Canada's energy sector, acquired US based Antares Capital for US\$12bn. In September 2015, Emera Inc., an energy and services company headquartered in Halifax, Nova Scotia, acquired TECO Energy, a US energy related company, for approximately US\$10.4bn, reducing its Canadian assets to only 23 percent of its portfolio. In February 2016, Fortis Inc, a leader in the electric and gas utility business, acquired ITC Holdings Corp., a US based energy infrastructure company, for approximately \$US11.3bn in furtherance of its stated objectives to possess significant growth assets. In March 2016, TransCanada Corporation completed its acquisition of Columbia Pipeline Group for approximately \$US13bn acquiring (rather than constructing) additional pipeline assets to grow its business. Finally, in September 2016, Canadian based Enbridge Inc. and US based Spectra Energy Corp. agreed to combine in a US\$28bn stock deal to create the largest energy infrastructure company in North America fulfilling Enbridge's stated objective of diversifying and expanding its sources of growth beyond 2019.

By contrast, big deals in Canada, other than Suncor Energy Inc.'s acquisition of additional oil sands assets from two of its joint venture partners in the Syncrude oil sands project, have been few and far between.

#### Intermediate is the new junior

In prior years, Canada depended on its vibrant junior oil & gas sector to accelerate recovery from down markets. All that was needed was readily available capital from banks and a capable and experienced management team. In today's environment, that no longer works. Players in the junior sector have been disproportionately affected by the low-price commodity environment. Cash flow from operations is often insufficient to meet operating expenses and drilling programmes have been significantly cut back. Reserve values and reserves are both decreasing – not only as a result of lower commodity prices but also as a result of lack of investment. Canadian banks are suffering losses and looking at ways to reduce their exposure to the energy sector. At the end of each quarter, junior and intermediate exploration and production companies are seeing a reduction in the borrowing bases for their reserve based lending facilities, further exacerbating their financial woes. Since reserve based lending is the most critical source of capital for junior exploration and production companies, the inability to finance operations from that source of debt capital has had

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a significant impact on the junior sector. The cost to 'start small' is just too high. And the 'reward', at least for North American private equity investment in the junior oil & gas sector in Canada, is just too small.

In this environment, most junior players do not have the financial ability to participate in the current unconventional resources growth plays in western Canada, like the Montney shale. These plays are capital intensive and drilling programmes are technologically complicated and challenging. New industry realities mean that 'juniors' will need to be bigger, stronger and more financially sound if they want to attract funding from the sources of capital that are available to them.

#### Closing the blinds on LNG in Canada – almost

One of the biggest missed opportunities for Canada is the development of a globally competitive liquefied natural gas (LNG) industry along British Columbia's west coast. This is as much a result of the global resource melt-down as the inability of Canadian companies to obtain regulatory approval of large scale infrastructure projects. In 2014 there were more than 20 proposed LNG projects for up to 250 mtpa of LNG capacity being proposed along British Columbia's west coast. By the end of 2014 and throughout 2015, several projects were deferred or cancelled. Two promising large scale projects were set to make a final investment decision in 2016 – Shell Canada sponsored 'LNG Canada', a joint venture with China National Petroleum Corporation, Mitsubishi Corporation and Korea Gas Corporation for up to a four train 24 mtpa LNG project; and the Petronas led 'Pacific Northwest LNG Project', a joint venture among Progress Energy Ltd., a wholly-owned subsidiary of Petronas, Sinopec, JAPEX, Indian Oil Corporation and Petroleum Brunei for up to an 18

mtpa LNG project.

The LNG Canada project was the farthest project along in terms of regulatory approvals. However, in February 2016 LNG Canada announced that it would delay a final investment decision until the end of 2016 to ensure that the project was economically viable in the current environment. In July 2016, Shell announced that the final investment decision planned for the end of 2016 would be deferred to an indeterminate future date.

The Pacific Northwest LNG project is the last remaining large scale LNG project that has yet to be deferred or cancelled. The proponents made a conditional final investment decision in 2015 pending receipt of federal environmental approval. After several regulatory delays, the project received federal environmental approval of its project on 28 September 2016. However, despite the earlier conditional final investment decision, the future development of this project is uncertain. There are 190 conditions attached to the federal environmental approval, including the first ever maximum cap on CO2 emissions. Petronas has stated that in light of the 190 conditions and the current economic climate, it will review the project to determine whether it remains economically feasible before it makes a final investment determination.

The global energy industry generally, and the Canadian energy industry in particular, has seen very significant structural and cyclical changes in a very short period of time. Unfortunately, the long-term implications will only truly be understood in hindsight. ■

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