



Paper for 2016 North America Forum *Insights from Recent Trilateral Energy Dialogue* Energy Council of Canada, Mexico Energy Secretariat, United States Energy Association

Energy leaders from the three countries have presented their insights on domestic energy developments and on ways to advance energy issues at recent events organized by the North American member committees of the World Energy Council. *North America Region Energy Fora* have been held in Calgary in 2014 and in Washington, DC in 2015. The next event will be hosted by Mexico in Fall 2017.

Energy transitions, policy leadership, technology and collaboration have been key themes in fora held in 2014 and 2015:

- ***Transformations Across the Energy Sector: Past Present and Future***, hosted by Canada in June 2014 in Calgary.
- ***How can countries which have development of fossil fuel resources as a key component of their economies contribute to achieving reductions in carbon emissions***, hosted by the United States Energy Association in Washington, DC.

The theme of the 2017 Forum hosted by Mexico will be:

- ***Regional Collaboration on Climate, Clean Energies, and Environmental Issues*** (tentative), to be hosted by Mexico in September, 2017.

These North American Region Energy fora are an opportunity to hear from energy leaders representing the three countries and to discuss common issues and opportunities to address them with their counterparts from across North America. This paper provides highlights from the events held in Calgary and Washington under four headings:

1. Observations on the transformations underway in the energy sector;
2. More detailed observations on the latest developments in the electricity sector;
3. Discussion of ways to earn public support for major energy projects; and,
4. Thoughts on climate change mitigation.

1. Transformations Across the Energy Sector: Past Present and Future

Perspectives on energy transformations in Canada, the United States, and Mexico were offered during an “energy conversation”.

- **Profound transformations are taking place in the energy sector in North America and globally.** This creates an opportunity for Canada based on responsible development of natural resources. The Government of Canada has refined its regulatory regime for tanker safety and emergency response. A closer dialogue with First Nations is being pursued. Progress on innovation is being made by industry through initiatives such as the Canadian Oil Sands Innovation Alliance. Canada recognizes the importance of accessing new export markets for oil and natural gas. Significant progress is being made on energy efficiency front.
- **Six transformations are underway in the United States’ energy sector.** Domestic production is ramping up rapidly due to use of new production techniques. Exports of energy commodities are increasing, particularly refined petroleum products and coal, and several LNG export projects are moving ahead. Technological innovation is seen on many tracks, for example, technologies to produce oil and gas from shale reservoirs, the

smart grid and demand management. The business model of the United States energy sector is changing, as major energy companies undergo restructuring, as the electric power industry becomes more competitive due to competition from natural gas and cheaper renewable technologies, and as utilities respond to changes in electricity markets. Consumers have greater choices, for example, options in personal transportation using biofuels, electricity or natural gas instead of gasoline. Lastly, the impact of fuel efficiency standards is becoming apparent in reduced gasoline sales and electricity sales.

- **Significant benefits arise for Mexico in the trilateral energy relationship** since Mexico is both a net energy exporter in the form of crude oil and a net energy importer of refined petroleum products.
- **The three countries should work towards sharing a vision around energy in North America.** Discussions should continue on whether there might be opportunities for examining information energy balances, looking at the future picture for energy infrastructure, and explore regulatory changes that would be of benefit to energy development in North America.

Transformations in the North American Energy Sector, past, present and future looked at the changes that are taking place in Mexico, the United States, and in Canada.

- **Mexico is in the midst of a major restructuring of its electricity, oil and gas sectors** with the goals of reducing monopolistic control and opening up the sectors to companies across North America. One issue which needs close attention is to provide information about the reforms, and the benefits and costs to society as a whole.
- **The United States is witnessing a closer integration of the electricity sector and the natural gas sector** as a result of new gas-fired generation coming on line due to new abundant supply and low natural gas prices. The distribution system, which was built to transmit power from centralized generation facilities, is undergoing a **rapid transformation towards a fully integrated combination of centralized and distributed generation, and real-time monitoring and control.**
- **Innovation was described as a primary driver and an essential ingredient in the energy transformations** underway across North America. Innovation was identified as a key source of leading-edge solutions to address important energy issues such as conservation of water in energy operations, safe operation of existing and new pipeline systems, integration of electricity from renewables into the modern electricity grid, and the use of alternative “fuels” in the transportation sector, such as electric vehicles for personal and fleet use, and natural gas for freight vehicles.
- **Traditional utilities face considerable challenges** as the energy sector undergoes of transformation. Shareholders will always expect a fair return on their investment in a market which features many new forms of generation, some of which are subsidized, and in a market which is characterized by short term contracts rather than long-term contracts matched to the life-time of centralized generation plants. Simultaneously, the generation paradigm is evolving away from centralized generation to a more diversified supply mix.

2. Observations on Developments in the Electricity Sector

The electricity sectors of the three countries are in the midst of a period of rapid change on many fronts – generation technology, grid management, energy storage, and evolving market practices.

- **Mexico is aggressively introducing solar and wind generation into the generation mix.** To meet these challenges Mexico will need to implement improved control technologies, new operating practices, better trained operators, more flexible power plants, a more flexible and robust transmission grid, and improved forecasts for variable energy resources.

- **The State of Minnesota is making the transformation to cleaner electricity** by reducing the share of generation from coal-fired generators from 65% to 45%. Nuclear and renewable technologies will make up the bulk of the difference, with expected growth in the share of generation from natural gas fired facilities and from **imports of hydropower from the neighbouring province of Manitoba**. The State has implemented leading-edge arrangements for managing and pricing new intermittent sources of supply including **net metering and pricing for ancillary services such as energy storage**.
- **The province of Ontario has implemented several policy initiatives designed to transform the electricity sector**. Examples are the complete elimination of coal-fired generation in late 2014, feed-in tariff programs to incent wind and solar generation, widespread installation of smart meters, and staged refurbishment of the province's nuclear generation facilities. Ongoing actions in Ontario include integration of generation from wind and solar into the generation mix, new electricity storage projects, a commitment to implement a cap and trade emission trading program, and ongoing transformation of electricity utilities.
- An initiative by the Canadian Electricity Association aims **to explain the value proposition of electricity** as a means to improve understanding of the services provided by the sector and the implications for future price trends. The communication emphasizes four points: the low cost of electricity services in comparison to other household expenditures; the services provided by a complex electricity system which spans generation, transmission, distribution to the household and overall monitoring and control to ensure reliability; the need to re-invest in the system to replace aging infrastructure and to implement modern approaches to cleaner generation and better grid management; and, the importance of investing now to ensure a clean and reliable system for future generations.
- **Coal is the world's fastest growing fuel**, supporting the need for regulation of emissions, and at the same time, keeping the cost effectiveness of coal-fired generation in mind when decisions are made about future generation capacity.
- **Operational flexibility and power exchange between neighbouring jurisdictions** are key considerations when planning the electricity system of the future.

In parallel with the technological changes, **market practices in the electricity sector are evolving and undergoing transformations** as well.

- The structural reform of Mexico's electricity sector involves the transformation from a monopolistic arrangement for generation, transmission and distribution to **a phased-in opening of each sector to competition**. An example of the features of Mexico's re-structured electricity market is the creation of a new organization (CENACE) to control, dispatch and operate the electricity market.
- The challenges faced by municipalities of **providing new supply to meet increasing electricity demand from customers in rapidly growing urban centers** were described for the City of Toronto, Ontario. Extraordinary efforts are required to locate power distribution equipment in compliance with urban development by-laws, within space limitations in areas with very high building density, and without causing large increases in electricity prices. Energy conservation initiatives are another key policy initiative.
- The United States is witnessing **major changes in the electricity market as natural gas displaces coal-fired generation** due to current low market prices for natural gas, as the older fossil plants are retired, and as new forms of distributed generation come on line, supported by government incentives.
- **Electricity demand is moderating** due to the fall-out from the economic recession, due to re-structuring of the goods and services mix across the economy, and due to policy measures such as the prohibition of incandescent light bulbs.

- **Security of the electricity system** is emerging as a key issue.

3. Earning Public Support for Major Energy Projects

The greatly increased level of public engagement in energy and environmental issues comes to the fore during regulatory processes to consider major energy projects. Earning public support for major energy projects has become a key focal point.

- There is a high level of media interest in the reaction of aboriginal groups, communities and the public around large-scale energy infrastructure projects. Concerns arise due to the impact on traditional uses of the land, on local and regional environmental impacts, and the implications for changes to the social fabric of affected communities. **The use of the term “social licence” should be abandoned** since it suggests a formalized licensing process that includes a list of requirements and some sort of an approval process by a fictitious issuer.
- **A more appropriate phrase is “earning public support for resource development projects”** which conveys a key requirement to meet before proceeding with a project. Concerns arise around health and safety, impacts on the local and regional environment, and impact on communities. As a result, local resistance causes delays, heightened confrontation, and a loss of public support and confidence. Attention is needed on four key pillars: the implications and benefits for the local economy, maintaining community integrity, dealing with the impacts on the local and regional environment, and fostering genuine engagement with the people and governments affected by the proposed project.
- Shale gas development in the Appalachian Basin has resulted in environmental impacts of concern to the local residents. To address the issues and to foster a dialogue with the affected communities, **the natural gas industry has developed guidelines for sound operating practices**. A key feature of the guidelines is regular verification of compliance with the operating requirements by an independent third-party organization. The guidelines are example of how the natural gas developers have been successful in earning public support for shale gas production in the Appalachian region.
- **Opening up dialogue with communities affected by resource development projects well ahead of consideration of a particular project** was underlined as an essential first step in earning public support. The dialogue should be focused on building a respectful relationship with the community. In the second stage, dialogue could commence on the nature of the proposed project, and the potential opportunities and implications for the community. The proponent should be prepared to share a portion of the jobs, economic benefits and long-term revenues with the community, for example through Industrial Benefit Agreements, and also to modify the configuration and timing of the project in order to align the interests of the community and the project proponent.

4. Climate Change Policy

Climate policy has been a consistent focal point for the trilateral energy dialogue organized by the North America Region Energy Forum. The significance of this policy topic has been increased greatly by agreements reached at the COP-21 Conference in Paris and by the commitments for aggressive GHG reductions made by the United States and China.

Observations on recent policy initiatives to address climate change mitigation and adaptation, and recent developments in carbon capture, use and storage, were presented.

- The World Energy Council advocates: the need for stable and clear policies; no one-size-fits-all approach to policy making; and, the importance of fostering greater dialogue between policy-makers and the business community. **The World Energy Council recommends five key policy directions** contained in the 2014 World Energy Trilemma: efficient technology transfer and elimination of tariffs on energy technologies; effective and efficient carbon pricing mechanisms; efficient funding mechanisms; remembering to focus on the demand side of the equation as well as the supply side; and, to continue to invest in R&D and innovation.
- Mexico has submitted its Intended Nationally Determined Commitments and is working on energy policy and environmental policy in parallel. **Mexico expects to see a reduction in generation requirements as a result of energy efficiency measures.**
- **Developments in climate policy include:** China's announcement of new climate policy; the US' Clean Power Plan; and, recent provincial climate initiatives in BC and Alberta and their implications for emerging climate policy. One highlight was the observation that all emissions from the oil sands added up to the equivalent of the emissions from three coal-fired power plants in Georgia. Other issues which need to be considered are climate justice, third party review of reports of national emission reductions, and phase-out of fossil subsidies, the practical timing of reaching emission reduction targets, and sustaining the funding in the Green Climate Fund.
- While most energy policy discussions at present focused on climate policy, **a broader perspective is needed which includes the benefits as well as the impacts of using fossil fuels**, such as impact of crude oil exports on trade figures, and economic growth and retention of well-paying jobs.
- **A world-leading carbon capture, use and storage technology has been implemented** at SaskPower's Boundary Dam Carbon Capture Project which is projected to capture on the order of 1 Mt per year. Also described was the Aquistore deep saline reservoir storage project associated with the Boundary Dam project.
- **The electricity sector is the only energy sector that is actually reducing emissions**, with an anticipated decline in emissions from the transportation sector due to electrification and significant impacts on Canada from the US' Clean Power Plan. Looking ahead, policy mechanisms are to put a price on carbon, more effective regulatory regimes to shorten approval times for major projects, and in North America, greater cooperation around emission trading regimes and targeted support for promising breakthrough technologies.
- **The importance of finding good technology solutions** was underlined to address the environmental impacts of energy production and end-use. Over 10 Mt of CO₂ has been injected by experimental capture projects in the US.

In Closing

The Energy Council of Canada takes this opportunity to share the insights provided by the following energy leaders from Mexico, the United States, and Canada. The energy leader's contributions to this trilateral energy dialogue are greatly appreciated.

Mexico

- **Jose Luis Aburto**, Deputy Director for Planning National Electric Utility
- **Francisco Barnes**, Commissioner, Mexico National Energy Commission
- **Juan Eibenschutz**, Director General, Mexico National Commission on Nuclear Safety and Safeguards; Honourary Vice Chairman, World Energy Council
- **Javier Estrada**, Assistant Secretary for Energy Planning, Mexico Energy Secretariat
- **Gabriel Heller Green**, Assistant Secretary for Oil and Gas Councils and Committees, Energy Secretariat.
- **Pablo Mulás del Pozo***, Secretary, Mexico National Committee of the World Energy Council

United States

- **David C Boyd**, Vice Chair, Minnesota Public Utilities Commission, NARUC Electricity Committee
- **Jared Daniels**, Director, Office of Strategic Planning and Global Engagement, United States Department of Energy
- **Luis Finkel**, Executive Vice President, Government Affairs, American Petroleum Institute
- **Revis James**, Director, Generation R&D, Electric Power Research Institute
- **Dean Oskvig**, President and CEO, Black & Veatch; Vice Chair, WEC North America
- **Fred Palmer**, Senior Vice President, Peabody Energy
- **Andrew G. Place**, Corporate Director, Energy & Environmental Policy, EQT; President, Centre for Sustainable Shale Development
- **Barry Worthington***, Executive Director, United States Energy Association

*Heads the national Member Committee of the World Energy Council

Canada

- **Colin Andersen**, Chair, Energy Council of Canada
- **Francis Bradley**, Chief Operating Officer, Canadian Electricity Association
- **Jim Burpee**, then President, Canadian Electricity Association
- **Graham Campbell***, President, Energy Council of Canada
- **Mike Cleland**, then Nexen Executive in Residence, Canada West Foundation; Member of the Board of Directors, Quality Urban Energy Systems for Tomorrow (QUEST)
- **Lisa DeMarco**, Senior Partner, Rizzo, Allan and DeMarco LLP
- **Serge Dupont**, then Deputy Minister, Natural Resources Canada
- **Richard Grant**, Partner, Gowling Lafleur Henderson LLP
- **Anthony Haines**, President and CEO, Toronto Hydro
- **Ross Hornby**, Vice President Government Affairs, GE Canada
- **Dawn Farrell**, President and CEO, TransAlta Corporation
- **Mike Marsh**, President and CEO, SaskPower
- **Marie-José Nadeau**, Chair, World Energy Council

*Heads the national Member Committee of the World Energy Council

Graham Campbell
President,
Energy Council of Canada