



Foreword: *Energy in Canada @150 and Beyond*

Energy Leaders Commemorate Canada's 150th Anniversary

By Graham Campbell, President, Energy Council of Canada

Introduction to a series of papers prepared by Canadian energy sector leaders – at the invitation of the Energy Council of Canada – exploring key aspects of our ongoing national energy story on the occasion of the 150th anniversary of Confederation.

Energy: Integral to Canada's Story

Energy has always been an integral part of Canada's story. From the beginning, Canadians have looked to energy for comfort, a route to development of the country's abundant natural resources, and a source of economic activity that contributes significantly to societal well-being. Examples are many: from the early use of fire for warmth, to the pre-Confederation discovery of oil, to the first hydropower developments along eastern Canadian rivers, and to wind-DC systems on the Prairies.

The energy story continues. Today, energy is a prime mover in the Canadian economy, a critically-important component of our balance of payments, a source of investment and jobs, and a route to social development for our communities and First Nations.

Looking ahead, Canada's energy outlook is positive. Many promising directions are apparent: in clean technology, evolving market practices, finding a prudent balance between energy impacts and the environment, and furthering energy's important role as a contributor to Canada's regional development and growth.

***Energy in Canada @ 150 and Beyond:* Our Commemoration of Canada's 150th Anniversary**

One of the Energy Council's four strategic goals is to foster insightful, multi-sectoral dialogue on energy matters of importance to Canadians.

As Canada celebrates its 150th year, the Energy Council of Canada is contributing to this goal by gathering articles authored by Canada's energy leaders on topics of their choice. The Energy Council is guided by a broad energy sustainability objective; by the vision of *an affordable, stable and environmentally-sound energy system providing the greatest benefits for all Canadians*; and, by three World Energy Council themes (energy security, energy equity, environmental sustainability).

The articles in this collection will enhance the understanding of the important roles that energy will play in Canada's economic, social and regional development for the next 50 years.

Who better to write these articles to commemorate Canada's 150th anniversary than today's energy leaders? Their perspectives,



based on executive and operational experiences in Canada's energy sector, are most interesting.

The current and future energy scene will provide a rich spectrum of material.

Issues for Consideration

Here are a few considerations which will have a bearing on Canada's energy future to 2067:

- International, national, and provincial policies will drive a gradual decarbonisation of energy systems. They will see different pathways and pace of change, but the broad direction is clear, driven by a growing public interest in doing all we can to green energy systems. What will the evolution of energy systems look like, what are the important upcoming milestones, and where are the "sweet spots"?
- Consumers have become much more engaged in energy matters. For example, the cost of energy has emerged as a key issue. They may be willing to pay a bit more for clean energy, but not a lot more. Public backlash in Ontario due to increased electricity prices confirms this. How can we raise awareness of the energy "value equation" and the fact that improved environmental performance costs more?
- Major energy projects also attract widespread attention. Are we making progress on understanding how best to incorporate the interests of affected parties such as First Nations and communities into the earliest interest-based dialogue between the proponent and the people? Can this mutually respectful dialogue continue into the design, construction, operation, and monitoring of the project? Will these steps lead to well-balanced energy decisions?
- For the end-use sectors, what are the breakthrough developments that will reduce costs and accelerate major improvements in environmental performance? Biorefineries, EVs and natural gas for transportation, industrial process improvements, Zero Net buildings are in sight now; what's coming next to make further major gains?
- To date, new green technologies such as wind and solar have been put to use on a technology-specific basis, in part, as a result of technology-specific financial incentives. Will there be energy leaders who envision and implement an energy system which integrates generation from wind, solar, biomass, tidal, and hydro, together with energy storage, in a clever, synergistic, cost-effective manner?
- What are the most likely technologies which could see major decreases in equipment and operating costs, akin to the recent dramatic reduction in cost per watt for solar panels? How do we mobilize innovation and investment to put new solutions to work?
- What do energy leaders see for the evolution of nuclear energy? Will small modular technologies emerge for providing both electricity and heat. Is a good solution at hand for managing waste, and may re-processing and re-cycling spent fuels be part of nuclear operations in the future?
- How will producers of energy commodities including bitumen, natural gas, oil and uranium respond to expectations of reduced environmental impact from their upstream and downstream operations? Technology and advanced operating practices will be part of the answer, and finding ways to share new technologies through mechanisms such



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as the Canadian Oil Sands Innovation Alliance will be key parts of the story.

- Looking at the North American energy market as a whole, and recognizing that the bulk of energy trade is bilateral across borders, will a case emerge for enhanced continent-wide energy trade to the advantage of both exporting and importing countries? How will access to new foreign markets impact on the energy market in Canada and North America?
- Looking at corporate strategy and the direction of future large-scale business investment, will the trend to “energy companies” continue, or will more specialization occur to achieve “pure play” efficiencies? What impact will de-carbonization policies have on corporate strategies and investment patterns?

During 2017

The energy leaders’ articles will be posted on our website and social media channels as they come in. So, keep an eye on www.energy.ca as they share their insights about Canada’s energy future during 2017. We hope that the incoming articles will inspire dialogue and critique as they are posted.

Second, we will weave articles into our program of coast-to-coast events and activities as each is being planned. An author may be invited to present a Keynote Address or participate in a panel session, for example.

Third, towards the end of the year we will consolidate the articles into an e-book. It will be accessible then on our website and in printable format if a hard copy is desired.

The Energy Council of Canada trusts that this project will shine an interesting light on how Canada’s energy leaders foresee aspects of Canada’s energy future from now to 2067.

Graham Campbell was appointed President of the Energy Council of Canada on December 16, 2013. After starting in the oil and gas industry with Shell Canada Resources, Graham’s career has progressed through roles in government and regulatory agencies culminating as Director General, Office of Energy Research and Development, Energy Sector with Natural Resources Canada from 1997 to 2008. Graham’s earlier experience includes the National Energy Board, the Canada Oil and Gas Lands Administration, and the federal departments of Energy, Mines and Resources and Indian and Northern Affairs. Following his work at NRCan, Graham undertook policy research at the Conference Board of Canada and he led the Carleton University Sustainable Energy Research Centre as the Centre’s Executive Director. In the area of international energy collaboration, he has served as the chair of the International Energy Agency’s senior technology committee, and he co-chaired the International Partnership for the Hydrogen Economy. Graham has a broad perspective on energy issues based on his work in a range of energy sector organizations engaged in exploration, energy regulation, technology development and policy research.