GENERATION ENERGY
Moving Canada Forward

Generation Energy Workshop Report

Regina – May 8, 2017

Executive Summary

On May 8, officials from Natural Resources Canada joined the Energy Council of Canada in welcoming roughly 70 attendees from universities, utilities, energy companies, Indigenous organizations, and local communities to a workshop on Generation Energy. Opening remarks were provided by Kim Rudd, Parliamentary Secetary to the Minister of Natural Resources. The workshop was facilitated by Bruce Dudley, Senior Vice President, Delphi Group.

WORKSHOP OVERVIEW

The workshop tackled a series of questions:

1) What will Canada's energy system look like in 2050?
2) What are the values that will help guide the way?
3) What are the pathways and guideposts to help get us to the vision (how do we get there)?

KEY INSIGHTS

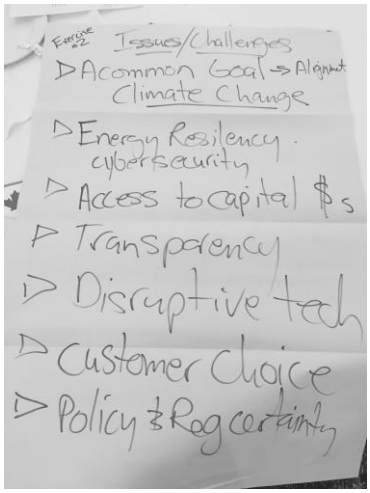
- Canada requires a long-term vision and framework that is enduring and resilient to changes in government. This vision include a diverse energy supply, with a focus on electrification, regional electricity interconnections, renewables, and storage.
- Regional context is fundamental to future energy planning – the federal government should collaborate with provincial, territorial, Indigenous and municipal governments to help coordination policy frameworks focused on regional economic advantages.
- Federal, provincial, territorial, and Indigenous governments need to look at how to agree on, and cooperate to achieve, common results and objectives on a sustained basis. Governments need to identify long-term benchmarks and commit to measuring progress. Support by the private sector is also required to achieve any long-term energy vision.
- By 2050, Indigenous communities should have no more energy poverty, be active in decision-making and the economy, and have equal access to programs and information.
- Canada's energy future is not just about achieving emissions targets, but about ensuring energy is affordable, reliable, and accessible.
- Canada needs to increase investment in innovation – focused on emerging and breakthrough energy technologies and clean energy sources – to support economic development and competitiveness.
- To improve public confidence in energy decision-making, there is a need for fact-based policy and the sharing of data and knowledge among governments, utilities, and Canadians. The creation of a Canadian energy information agency could meet this need.

When asked about **values that should guide the transition**, there was a convergence of views around **respect, trust, equality, transparency, honour, and diversity.**

*To note, this summary was developed through the interpretation of plenary remarks and workshop notes

POINTS TO REGISTER

When asked to identify the main issues and challenges that Canada will face when creating its energy system of the future, participants gave a number of answers:



- Societal objectives and goals –a common view towards 2050
- Managing energy affordability and costs in the transition
- Supporting infrastructure renewal and a resilient energy sector
- Maintaining access to capital, competitiveness, and agility in the energy sector to support the transition and economic growth
- Supporting and managing disruptive innovation, emerging technology, and skills retraining
- Ensuring public engagement and confidence and political will
- Equality, transparency, access to energy, and customer choice
- Understanding regional contexts
- Government cooperation and policy and regulatory certainty

Natural Resources Canada, the Energy Council of Canada, and the facilitator synthesized these challenges into a number of themes. Participants identified which themes they would like to work on and broke into small groups for discussion.

Theme 1: Electrification

- One of the major pathways toward a cleaner energy future is the electrification of the economy, including transportation, home heating, and industrial processes. While this could substantially increase demand for electricity, a number of clean options exist to grow future electricity supply (e.g., hydro, nuclear, renewables). It is important to note that all energy sources have a different mix of social, environmental and economic costs and benefits.
- There are potentially significant economic implications (e.g., cost, competitiveness, labour markets, energy exports) and social (changing energy use) impacts of electrification. Support for electrification requires a consistent, cohesive, and integrated strategy involving everyone.
- Reliability and competitiveness issues are key to Canada's electricity future, understanding the variability challenges of renewables and the increased costs of a larger electricity system.
- Understanding how large the electricity system will become, in terms of future energy demand, is critical to ensure proper system planning, including preparing for increased investment and building public support in new infrastructure development.
- Building regional electricity grids between provinces and territories is an important first step to increase trade in clean energy (e.g., hydro, wind, solar, geothermal).

Theme 2: Affordability

- Costs are a major driver of energy decisions, with impacts on households, businesses and industrial competitiveness. Social and environmental costs need to be integrated into decision-making processes.
- In the future, it is likely that Canadians will be more involved in energy production and use (rooftop solar, new storage technology, use of artificial intelligence). Energy production could be an important new source of income for Canadian households.

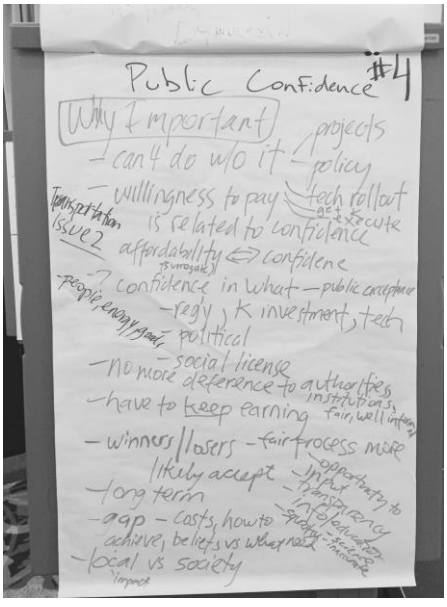
- Universal access to affordable energy and fair distribution of the costs of the energy transition should be key long-term objectives for Canada, especially considering the need for large infrastructure investments to support tomorrow's energy system. It is important to look at the different costs and situations in urban versus rural communities in Canada's energy future.
- Research and development should focus on technology to lower energy costs for Canadians (e.g., energy efficiency, smart energy usage, energy storage).
- Canadian governments need to cooperate to manage costs, support resilient and efficient infrastructure, and make evidence-based decisions. Regional differences will require a diverse set of approaches.

Theme 3: Renewables and Storage

- Canada's energy future should incorporate a wide variety of renewable energy, including renewable natural gas and biofuel, other biomass, solar photovoltaic, wind, geothermal, tidal and hydro. While we should strive for a high percentage of renewables integration, we also need to address baseload electricity generation and energy system costs.
- Support for new storage technology can help intermittent renewable energy integrate into the electricity system. We need to increase government support and 'over-vector' on energy storage, while investing in a number of technologies (e.g., fuel cells, lithium-ion, hydrogen, pumped-hydro, compressed air).
- Canadian jurisdictions must leverage regional advantages in renewable energy, build both small and large-scale projects, and support skills re-training, education, and a workforce strategy for youth. Canada can also take advantage of emerging global markets for renewable energy by supporting domestic manufacturing industries for renewable technology. A good first step is to identify what we want to be good at, and then cooperate and collaborate across government, academia, and the private sector to get there.

Theme 4: Public Confidence

- Canada's future energy vision should be a diverse and clean energy system that is reliable, affordable, accessible, and based around openness and transparency. Without this vision, it will be difficult for Canadians to have confidence in energy regulation and decision-making.
- Public confidence is necessary to support policy decisions, to manage projects, and to roll out the next generation of technology. To achieve this, cooperation between federal, provincial, territorial, and Indigenous governments will be critical.
- With potential winners and losers in the transition, transparency and public involvement in energy decisions will be important.
- There is a need for fact-based policy (with indicators and measurements of success) and the sharing of data and knowledge among governments, utilities, and Canadians. An information agency could meet this need.
- Different local and societal contexts make gaining public confidence a nuanced challenge. Forward-looking, long-term planning will help mitigate this and create new jobs in a cleaner economy. Communities and individuals need to be empowered to participate in energy planning and decision-making.



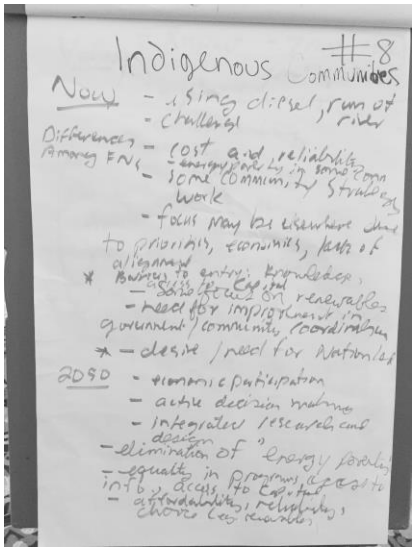
Theme 5: Government Cooperation

- One of the biggest challenges in the long-term energy transition is how to support government cooperation along a common set of principles, pathways, or objectives. It will be important to focus on the right objectives, not pick winners, and look to opportunities that will give us a 'bang for our buck' (e.g., lower capital investment).
- Both federal and provincial government funding is required to achieve energy targets. Mechanisms to support the transition could include energy right of ways, a national non-partisan entity/organization to advance long-term plans and actions, and national codes and standards for energy efficiency.
- International cooperation should be a major priority – collaboration with other countries can help achieve domestic objectives, while improving our reputation as a clean energy leader.
- It will be important to identify best practices domestically and internationally. For example, independent organizations have helped the European Union conduct energy planning.

Theme 6: Regulatory Certainty

- Regulatory certainty is impossible without political and policy certainty and public engagement and education. Fact-based, political consensus-building processes and regulatory compacts are required to help guide efforts across political aisles and jurisdictions. Neutral and independent decision-making agencies are critical to the transition.
- Regulation is a critical tool to help achieve long-term energy goals. Investment in tomorrow's energy system will require a high degree of certainty, and clear requirements and time horizons. Regulatory uncertainty may restrict long-term capital investment in energy.
- How we accommodate regional differences is important; local governments may be more nimble and therefore be able to break through barriers.
- Tomorrow's regulatory regime must be flexible to change, especially considering the pace of technology development.

Theme 7: Indigenous Context



- While some Indigenous communities enjoy reliable systems, transmission linkages, and renewable energy programming, a common theme across Indigenous communities is a lack of access to affordable, clean, and reliable energy. Many communities are also facing a lack of knowledge and investment.
- There is a desire for nation-led solutions based on respect, trust, and honour. An Indigenous vision for energy is one where communities have no energy poverty, are active in economic decisions, and have equal access to programs and information.
- Indigenous communities require energy solutions focused on Indigenous outcomes and choice (e.g., clean energy *and* job creation, First Nations utilities). Improvements to the electricity grid (e.g., micro-grids) and new renewables offer economic opportunities for Indigenous peoples.
- We need to be open and flexible to new ideas (e.g., research and design can be better integrated, national energy planning could be conducted by a multi-jurisdictional agency).