

# Generation Energy Workshop Report

Halifax – August 29, 2017



# Executive Summary

On August 29, 2017, Natural Resources Canada and the Maritimes Energy Association co-hosted a workshop to contribute to the cross-country Generation Energy dialogue. Roughly 60 participants from universities, industry, Indigenous communities, non-profit organizations, and government came together to discuss and debate long-term opportunities and challenges for energy in Canada.

## WORKSHOP OVERVIEW

Participants were asked to answer the following key questions:

1. Can you agree on a consensus vision of energy in Canada in 2050?
2. What are the values and principles that will help inform this vision?
3. What are the pathways and guideposts to achieving your vision (how do we get there)?

## KEY INSIGHTS

- Cooperation, engagement, and consensus-building between governments, the private sector, civil society, and Canadians will be critical to setting a 'borderless' low-carbon for energy and meeting long-term objectives.
- There are many values integral to shaping Canada's energy future, including respect, equality, fairness, conservation, transparency, and courage.
- Leadership is key to meeting ambitious energy efficiency targets – governments need to set a vision, develop a coherent policy framework, lay out long-term goals (potentially by sector), provide funding, and manage programs to support this vision. At the same time, consensus and collaboration between different players is fundamental to success.
- A Canadian vision for energy storage should be based on affordable and practical storage systems that include a suite of solutions to meet regional needs across the country.
- Ensuring affordable energy is available to all Canadians is a key long-term priority. Decisions on energy need to balance the need to transition to a low-carbon energy system with the potential impact of rising energy costs on consumers.
- The energy industry is an important long-term source of economic opportunity – providing tax revenues, jobs, and critical services to local economies.
- Electrification is an important opportunity to meet climate change objectives by leveraging Canada's clean energy resources. Each province and territory will need to conduct its own assessment on the viability of electrification based on individual contexts.
- Technology is a key enabler for various long-term energy goals, including low carbon energy, and equitable and affordable energy. Canada should look to leverage technology advancement to become a global leader in clean energy products, services, and technology.

When looking at past changes to Canada's energy system, participants highlighted the move away from production of domestic coal in Nova Scotia, an increasing awareness of environmental issues, the evolution of wind and solar technologies, and the growing chorus of voices interested in shaping energy policy and decision-making

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

## POINTS TO REGISTER

Following an initial discussion on past changes to Canada's energy system participants worked in small groups to identify a number of key opportunities and challenges for energy in the long-term. Groups raised the following issues at the end of the discussion:

- Advancing inter-jurisdictional cooperation and engagement
- Managing the low-carbon transition
- Ensuring affordable and equitable energy ('democratizing energy')
- Focussing on energy efficiency, including net-zero homes
- Finding solutions to regulatory challenges and leveraging opportunities
- Managing the opportunities and challenges of electrification
- Maximizing energy resources and tapping into the global clean technology market
- Ensuring economic competitiveness
- Improving energy data and information
- Supporting public education on energy
- Adjusting to rapid technology advancements, including distributed/smart grids, storage, and electric vehicles
- Maintaining grid security
- Building consensus around energy decisions and improving social license
- Planning for change with imperfect knowledge
- Providing clean energy globally to those who do not have it

Participants selected seven of these topics for further discussion, using the framing questions provided as a guide. The following points provide a high-level summary of table conversations.

### Theme 1: Energy Efficiency

- Energy efficiency is often labeled the 'first fuel' of choice, due to its status as one of the lowest cost options to meet rising energy demand. Energy consumption is not economic growth. The vision of Canada's energy future should take both of these points to heart. Efficiency needs to be a basic principle of future planning and should be accounted for before making significant energy-related decisions and investments (e.g., building new energy supply, new construction and retrofits, policy and program development).
- Large gains in efficiency require collective action. Every player in the energy system has a role and a responsibility to improve energy efficiency. Ongoing communication and public education can help educate consumers and drive positive action.
- Consistent reassessment of policies and approaches, by both the public and private sector, to address changing markets, social conditions, and new technology, will help meet energy efficiency goals in the years ahead. Collecting data and information on energy end-use will help inform decision-making.
- Canadian jurisdictions have different regional contexts and varied approaches to improving energy efficiency. Different organizational models to support efficiency have risen across the provinces and territories (e.g., independent organizations, government departments, utilities). Best practices and information need to be shared to drive efficiency improvements.

**"Energy demand in Canada should be 50% less than what it is today by 2050."**  
*-Halifax Workshop Participant*

- A mix of ‘push’ (stringent regulations) and ‘pull’ (labeling, voluntary programs) actions are needed by governments to incentivize energy efficiency.
- Energy efficiency is a key component to the advancement of low-carbon transportation in Canada. Municipalities need support to integrate efficiency principles into city planning to reduce reliance on road transportation. Action should also target fuel efficiency improvements in vehicle and freight transportation.

## Theme 2: Energy Storage

- Energy storage can help us get to the point where we do not need a consistent baseload source of electricity (e.g., natural gas or coal). Instead, variable renewables and other sources of clean electricity could be backed up by energy storage systems to provide energy when it is most needed. Without appropriate storage, the development of variable renewables is limited.
- Additional research and analysis is required to identify clear goals – such as the appropriate storage capacity, as a percentage of total demand, required in a specific electricity grid.
- Canada already has a vast potential source of energy storage in hydro. For provinces and territories without hydro resources, other solutions will be necessary to achieve this vision. Storage options will need to be flexible and easily integrated into existing electricity systems.
- Storage should be seen as an opportunity to improve the security and flexibility of an electricity grid, as well as a source of job creation and as a technology for export.
- Collaboration will be critical to overcome existing technology and cost gaps; industry, academia, and government need to work together to develop breakthrough energy storage technologies that are commercially viable and economically competitive. A practical approach would be an industry driven effort supported by government and researchers. Another approach would be the development of research centres of excellence in energy storage.
- Smart and progressive policy commitments will be required to help advance storage technology. There may be one superior technology that exists by 2050. Until then, a suite of different solutions is likely. Ultimately, technology advancement and regional contexts will help determine whether storage systems are utility grade (large) or distributed (small).

## Theme 3: Inter-jurisdictional cooperation, engagement, and consensus

- The development of a cohesive nation-wide policy framework, with federal, provincial, and territorial buy-in, and support from the private sector, Indigenous peoples, and Canadians can help achieve long-term energy objectives for Canada. Local governments and actors also need to be empowered to play a lead role in the energy transition.
- There are many barriers to cooperation between different actors, including: politics and divergent mandates, regional contexts and resource availability, allocation of costs and benefits, regulatory ‘silos’, existing economic conditions; and enforcement of commitments.
- Investments need to be made in infrastructure projects that improve energy trade and integration of energy systems between regions. These investments could in turn support the development of inter-jurisdictional electricity markets built off of regional advantages (e.g., hydro, wind).

A consensus vision of energy in 2050 should be based on the, “responsible development of renewable and non renewable resources, and the encouragement of affordability and environmental sustainability.”

-Halifax Workshop Participant

- Governments across Canada have many different starting points when it comes to managing a low-carbon transition (some are hydro rich, while others still rely on coal). It is a difficult discussion to have, but how the various costs of transitioning to a clean energy future are to be balanced across the country will be important.
- There are some great examples of positive collaboration between Canadian governments on energy (e.g., Newfoundland and Labrador and Nova Scotia; Nova Scotia and New Brunswick; New Brunswick and Québec). We need to review existing energy systems, identify best practices from these relationships, and leverage strengths across regions, and support both regional and local-level planning to create change.

## Theme 4: Energy Affordability

- Different regions in Canada could face very different potential futures based on their current energy systems and energy resources. What 2050 looks like in Québec will be different from 2050 in Nova Scotia. Provinces without an existing supply of clean electricity, such as Nova Scotia, face a triple challenge: low household incomes, high energy prices, and high emitting energy systems. Governments need to measure and monitor the number of people living in energy poverty (identified by an energy bill that exceeds 10% of household income) and prioritize support to this demographic.
- Dealing with the challenge of rising energy costs will be difficult. For example, if energy is more accessible and affordable then there is the risk that energy consumption will rise, creating the need for new demand and thus increasing system costs. This cycle needs to be avoided.
- As people invest in their own energy systems utilities are beginning to face a potential new challenge – how do you maintain an energy system with a potentially diminishing consumer base but ever-increasing costs. As energy systems are modernized, the focus should be on how to incorporate and share infrastructure costs fairly between commercial, industrial, and residential consumers.
- Energy efficiency is an important tool to reduce energy costs. On-bill financing and subsidies for efficiency improvements, community-oriented programs such as Property Assessed Clean Energy (PACE) financing, and new innovative approaches can all be used to reduce energy costs for consumers.
- Municipalities have a key role to play in managing energy affordability. All levels of government need to take a coordinated approach to reduce the negative impacts of high energy prices on individuals and businesses.
- New renewable and clean energy technology has the potential to significantly lower energy costs. The price of solar and wind energy, for example, continues to dramatically decrease.

## Theme 5: Economic Competitiveness

- Evaluation of energy decisions should be informed by rigorous and transparent economic cost-benefit analysis. This is tied to the need to improve energy literacy and energy information in the long-term to support balanced, honest discussions on energy issues.
- Governments need to carefully consider the impact of energy-related legislative and regulatory changes to these economies as we transition to a low-carbon future.

We should take a, "Canada first"  
 approach to energy policy.  
 -Halifax Workshop Participant

- Environmental issues are tied to economic growth in Canada. A key principle to help guide future energy planning needs to be environmental protection and stewardship.
- We need a step-wise approach to managing Canada’s energy transition: move slowly at first, test ideas and technologies, and only scale up solutions when they are commercially proven.
- A broader Canadian vision for energy should be based on pre-existing regional agreements between governments and with Indigenous peoples. Effective intergovernmental cooperation needs to allow a number of different approaches and solutions to be taken up and utilized, rather than any single approach.
- Public and private sectors need to share information and drive energy innovation with the objective of achieving regional economic growth.
- Governments, partners, and stakeholders need to fully understand each others perspectives to find common ground. Non-partisan policies and approaches are needed to avoid polarization, schisms, and inaction.

Canada needs, “competitive costs for energy generation and affordable costs for energy consumption.”  
 -Halifax Workshop Participant

## Theme 6: Electrification

- It is challenging to arrive at a consensus when it comes to the future of electrification in Canada. While the direction we are moving in is clear (zero carbon future), the pathways we take to get there are not. Electrification is only one approach to reach a zero carbon future. For example, renewable natural gas is a viable alternative to support low-carbon heating and transportation needs.
- All levels of society need to be engaged in the decision-making process for energy investments and infrastructure to support social license and build consensus on potential solutions.
- All actors involved in managing Canada’s energy systems and planning for the future need to acknowledge the goal of reducing the use of fossil fuels in Canada. Electrification is a key opportunity to support this goal. As costs could be significant, energy efficiency will be critical to reduce electricity demand and make electrification more cost effective.
- There are still critical questions to answer around the level of fossil fuel usage by 2050, the potential pace of change in the energy system, the availability of new technologies, how to build consensus and move forward together, and which infrastructure investments are helpful and which are not.
- The federal government should step up and clarify its role in guiding Canada’s energy transition. It needs to also consider the cost effectiveness of policies and programs across different regions in Canada before moving to implementation.
- Indigenous rights should serve as the basis for a future energy policy framework.
- The priority today should be on building new transmission to enable access to clean electricity. By 2050, new energy technologies and solutions will be commercially available to support electrification. We need to take a flexible approach to energy management that allows jurisdictions to adapt to changing conditions and leverage new innovations in an effective and efficient manner.

## Theme 7: Technology Advancement

- There are many different energy technologies that are emerging as commercially viable solutions to meet energy goals – including smart or distributed electricity software, new renewables such as solar and tidal, energy storage, and new energy efficiency technologies.
- Clean technology advancement is an opportunity to drive economic growth and trade, both through traditional energy sectors (manufacturing) and new enterprises (e.g., software). We need to better understand the potential labour force implications of this change.
- Political will and policy stability is needed to set out long-term goals and objectives and support emerging Canadian energy businesses. The overriding focus for both the public and private sector should be on driving clean energy technologies and solutions.
- Governments and the private sector need enhance partnerships to fund research and innovation. Efforts should be made to build formal organizational and institutional partnerships with specific technology focuses. Solutions should then be brought to businesses and consumers to address government priorities and objectives. One challenge will be related to increasing risk tolerance in government to being involved in the research, development, demonstration, and commercialization of technology.
- A key principle of Canada’s energy future should be ‘equal opportunity’. Citizens from different social and economic backgrounds and regions need to be given the same opportunity to develop technologies, innovate, and succeed.

### Partnerships

In a final discussion on the role of different actors in Canada’s energy future, participants highlighted that governments, industry, civil society, Indigenous peoples, and Canadians need to develop an open understanding and seek common ground on energy issues. The following additional points were raised:

#### **Governments:**

- Engage with all actors on a consistent basis
- Work together on a cross-country solution with regional nuances
- Develop and clearly communicate policy goals and objectives
- Lead by example, take risk, and support and adopt innovative technologies and practices
- Support non-partisan approaches

#### **Private Sector:**

- Develop, support, and adopt clean energy innovations (take risks)
- Work to support partnerships with different actors on energy priorities
- Drive education
- Act as good corporate citizens

#### **Society:**

- Inform, acknowledge and embrace a long-term vision for energy in Canada
- Act as informed consumers (be aware of energy costs, carbon footprint, recycle, etc.)
- Hold government and the private sector accountable for their commitments and actions
- Improve awareness and understanding of energy issues
- Develop informed perspectives on energy decisions and trade-offs
- Partner in Canada’s energy future – through community involvement, business ventures, etc.