

SUBMISSION

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Submission to Canada's Electricity Advisory Council: Barriers and solutions to achieving net-zero emissions goals in Canada's electricity sector

Clean Energy Canada is pleased to respond to Canada's Electricity Advisory Council's [engagement process](#) and to inform the Council's independent advice to the Minister of Energy and Natural Resources on key themes that the electricity sector must address to drive progress towards 2035 and 2050 net-zero objectives. Our comments largely focus on the first key theme for which the Council is soliciting feedback: "How to improve planning and oversight of electricity systems to support net-zero."

Questions

1.1 (part 1) How might the mandates of regulators, system operators and utilities need to change or expand, to meet net-zero?

The current policy, governance and regulatory structures used by Canadian provinces to maintain the reliability and affordability of the existing grid are insufficient to support the provinces' transformation of their energy systems or to properly integrate governments' other objectives, including climate, Indigenous reconciliation, or economic development.

Based on a review of emerging actions across Canadian and international jurisdictions, Clean Energy Canada has identified four initial ways in which the mandates of regulators, system operators and utilities may need to evolve to align with net-zero:

- A. Integrate climate and net-zero objectives into the mandates of regulators, system operators and utilities.
- B. Enable greater innovation and flexibility within regulators, system operators and utilities.
- C. Coordinate the planning and regulation of different energy systems (i.e. natural gas and electricity).
- D. Establish new regulatory and market instruments that facilitate the integration of distributed energy resources (DERs) and demand-side solutions, and enable greater local energy planning.

A. Integrate climate and net-zero objectives into the mandates of regulators, system operators and utilities.

Experts across the energy landscape have consistently highlighted the lack of alignment between a government's climate objectives and the policy direction provided to energy system actors as one of the major challenges facing regulators, utilities and system operators. This misalignment creates uncertainty and negatively impacts their ability to make and/or approve the necessary energy system investments.

Electricity Canada noted in their 2023 report "[Back to Bonbright](#)", the need for consistent policy direction to empower entities of all sizes to facilitate their preparations for net-zero. In [Pathways to Decarbonization](#), Ontario's IESO highlighted that addressing the "uncertainty around the future of carbon and emission targets" was critical in order to guide grid investments, effectively integrate new technologies and support the decarbonization of other stakeholders. And in the Ontario Electrification and Energy Transition Panel's (EETP) [final report](#), aligning with net-zero was referred to as energy planning's "north star".

Ultimately, the need for alignment between these objectives is essential for achieving a cost-effective energy transition, which protects the affordability and reliability of energy for households and businesses.

While a number of different policy tools can be utilized to communicate the government's climate objectives, a number of jurisdictions are choosing to embed net-zero into the mandates of regulators, utilities and system operators. [A number of U.S. jurisdictions](#), including Maryland, Colorado, Maine, Massachusetts, Washington, Hawaii and Washington D.C., have adopted legislation that mandates the consideration of climate change in regulatory decisions of their energy system actors.

Integrating net-zero into the mandates of regulators, utilities and system-operators should not replace or override other objectives, such as ensuring reliability, affordability or safety. Rather, achieving a net-zero grid and economy should be added as a core objective. This direction could be delivered via directives, regulatory changes or new legislation, as the Canadian Climate Institute recommended in its report, [The Big Switch](#).

B. Enable greater innovation and flexibility within regulators, system operators and utilities.

Dealing with the uncertainty created by the energy transition is one of the primary challenges that regulators, utilities and system operators face in modernizing their systems and deploying the necessary resources. Legacy governance and regulatory frameworks are intended to govern a system that grows incrementally over time as demand rises, slowly and cautiously integrating new technologies. However, the urgent need to decarbonize the economy by 2050, coupled with

a growing list of new non-emitting technologies presents a major challenge to this status-quo, necessitating new approaches.

While energy strategies and pathway assessments provide policy certainty and insights into the different decarbonization pathways, the energy system will also require new tools, regulations and mandates that permit – and even encourage – greater experimentation and innovation.

For regulators, this will require clarifying the policy objectives they need to consider (i.e. ensuring net-zero is being considered as they fulfill their role as an economic regulator), as well as empowering them to embrace novel approaches in reviewing proposals that are brought forward. For example, in a 2023 Clean Energy Canada B.C. convening on the deployment of zero-emission medium and heavy-duty vehicles (MHDV), [participants noted](#) that the BC Utilities Commission (BCUC) should be empowered to leverage greater flexibility in its rate review processes allowing investments to occur prior to the identification and confirmation of specific customer demand. While still requiring clear rationale and justification for the investments sought, the BCUC would have greater discretion to embrace novel proposals from the utility, allowing the proactive build out of necessary infrastructure.

Other examples include Western Australia, where [technology trials and pilot projects](#) have played a critical role in informing their energy transformation strategy, with more than 20 trials of new technologies undertaken across hundreds of sites as of 2021. These trials included testing how distributed energy resources could be aggregated to address grid scale needs, as well as projects that tested stand-alone power systems that combined renewables, batteries and generators for deployment in remote areas.

Where regulators need to embrace novel submissions in review processes, utilities and system-operators should be empowered to advance innovative approaches to deploying the resources and infrastructure necessary to achieve net-zero targets. Electricity Canada [suggests](#) that “flexible regulatory frameworks” could allow for the “proactive submission of utility investment or service proposals which are not bound by prescriptive timing requirements, allowing for multi-year investment plans or targeted requests submitted mid-rate-term”. BC Hydro has [already proposed this type of approach](#) in its 2023 update to the 2021 Integrated Resource Plan, where they recommend a new “living” long-term resource plan cycle, which would allow more regular updates, helping ensure their planning is matching the potential faster rate the energy transition requires.

Reforms that empower regulators, utilities and system operators to use innovative and flexible approaches to navigate the uncertainties of the energy transition should be advanced in a coordinated and consultative manner, ensuring that the government's objectives are clearly articulated, and that both utilities/system operators and their regulators understand and are brought into the new governance framework.

C. Coordinate the planning and regulation of different energy systems (i.e. natural gas and electricity)

Most Canadian provinces plan and regulate their natural gas and electricity energy systems through separate processes. This presents numerous challenges in ensuring emission reduction objectives can be delivered, while simultaneously protecting affordability and managing a cost-effective transition.

It is becoming increasingly important that governments institute reforms that facilitate the coordination of planning and regulation between energy systems - in particular the electricity and gas systems - in order to avoid stranded assets and manage consumer costs. As outlined in a [March 2023 report by the Building Decarbonization Coalition](#), without intervention, gas utilities alone are not properly incentivized to provide safe and reliable service at just and reasonable rates over the course of the energy transition.

Certain Canadian jurisdictions have taken some initial steps. The main Quebec electric and gas utilities (Hydro Quebec and Energir respectively) [established](#) a formal partnership in 2021 to better coordinate their systems. In B.C., the regulator [attempted to achieve greater integration](#) between BC Hydro and FortisBC by requesting collaboration between the two on the development of “energy scenarios” in 2022.

While jurisdictions across the world are taking a number of different approaches to modernizing how gas networks are governed and regulated, the reforms ultimately amount to ensuring that the natural gas system is no longer planned and regulated separate from the electricity system, and that both are covered by governance and regulatory frameworks that articulate the net-zero objective they must operate within.¹

D. Establish new regulatory and market instruments that facilitate the integration of distributed energy resources (DERs) and demand-side solutions, and enable greater local energy planning.

A final area of mandate reform concerns the treatment of local energy planning and the proliferation of distributed and local demand-side solutions.

One of the most consequential changes of the energy transition is the move from an overwhelmingly centralized energy system with few actors, to an increasingly decentralized one as DERs and other demand side solutions begin to play a larger role, and as electrification creates a growing demand for electricity — both of which necessitate a stronger mandate for local energy planning.

¹ Given the differences across different systems, a variety of approaches have been taken. In the UK, [a new bottom up regulatory framework](#) for enabling local heat networks has been established. In Massachusetts, the Department of Public Utilities [issued a new order](#) that places major constraints on the expansion of the gas system, ultimately working towards the establishment of a new regulatory structure that aligns the natural gas system with the net-zero objectives of the State.

DERs and other demand-side solutions have received increased attention as a means to balance and support higher levels of variable renewable energy and often at a lower cost than the alternatives. In the U.S., the Department of Energy has concluded that [DERs could reduce grid costs by \\$10 billion per year](#), while an [independent assessment](#) has suggested it could be as much as \$35 billion a year.

In Canada, [RBC has estimated](#) that DERs integrated into smart homes could save Ontario ratepayers \$500 million annually by 2040. In fact, an IESO-commissioned DER potential study found that across a range of scenarios, cost effective DER capacity was found to meet or exceed all incremental system needs. This corresponded to meeting 146-273% of the incremental summer peak and 106-311% of the incremental winter peaks in 2032. Importantly, the achievable potential (which factored in the real-world conditions and constraints) was found to be modestly lower, meeting 39%-62% of the expected incremental summer demand and 27%-100% of expected incremental winter demand, highlighting the role of regulatory and governance reforms to address these issues.

Internationally, a variety of jurisdictions have proposed or enacted reforms that extend from expanded mandates for regulators and utilities, to the creation of new entities to manage the planning and/or facilitation of local resources. In the U.S., the Department of Energy has released a [roadmap](#) to “accelerate the lift-off” of virtual power-plants (VPPs) — essentially networked DERs acting to provide grid scale demand and services. In the UK, the independent regulator Ofgem [has announced](#) their intention to proceed with the creation of both Regional Energy Strategic Planners (RESPs) to facilitate the planning of local systems, and the creation of a new Distributed System Operator (DSO) to coordinate the distribution market. In Western Australia, the creation of a new regulatory framework to support DERs was one of the top priorities of their original [energy transformation strategy](#).

Canadian provinces need to greatly increase the role of DERs, demand-side solutions and local energy planning. While energy efficiency is a frequent feature of utility resource plans, few if any jurisdictions have advanced a comprehensive approach to maximizing the role of local and demand-side solutions, despite their often lower cost than the alternative. Mandates for regulators, utilities and system operators could be amended to elevate the importance of these resources, ensuring that they be considered alongside more traditional system investments. Governments should also consider more comprehensive reviews, such as the ones highlighted in the UK and Australia, to investigate whether more substantive regulatory and governance reforms are required to properly unlock investment in these resources.

1.1 (part 2) How could net-zero mandates be implemented and operationalized?

In implementing these reforms it is important that governments, regulators, system-operators and utilities have clearly established roles, and are properly empowered to operate within them. Proper regulatory structures are essential to center net-zero objectives within the traditional economic regulation of the energy system. Clean Energy Canada supports the characterization

of the three distinct roles as outlined in Electricity Canada’s publication [Back to Bonbright: Economic regulation fundamentals can enable net zero](#) outlined in the table below:

Elected Government	Independent Regulators	Utilities/System-operators
Set clear, outcome-based policy to provide regulators and utilities a common understanding of required objectives and outcomes.	Sufficiently resourced and empowered to review, reject, modify, or approve an increased number of novel proposals.	Provided the flexibility to make innovative proposals with respect to investments, rate-setting structures, incentive structures, benefit-cost assessments, and rate design.

Notably, governments retain a key role in articulating clear, outcome-based policies and objectives that drive the actions of regulators, system-operators and utilities (i.e. energy roadmaps). This recommendation was mirrored in the EETP’s [final report](#), which calls for clearly articulated government objectives and properly empowered roles and responsibilities for the system-operator and the regulator.

In addition to articulating objectives and roles, governments should identify action plans to fulfill them. However, they should be careful to leave operational decisions regarding the procurement of specific resources to the system operator and/or utilities, and enhance the ability of the independent regulator to review these resourcing plans.

To that end, and as noted in [Electricity Canada’s report](#), it is recommended that government’s use “right-sized policy mechanisms, be they Mandate Letters, Regulation, or Legislation, to communicate timely, clear, and specific outcomes, which utilities and regulators are expected to facilitate without dictating how utilities achieve such outcomes or how regulators assess applications to achieve such outcomes.” Similar advice can be found in the EETP [final report](#) which ultimately did not recommend an immediate reform to the OEB mandate (despite the regulator identifying in their own submission a number of amendments that would allow them to be more proactive) However, the panel did note that “it may become necessary to provide the OEB with additional objectives, authority or functions in order to ensure it is able to effectively regulate the evolving energy sector and support the province’s clean energy economy goal.”

Ultimately, governments should consider processes that first assess the regulatory and governance gaps in a given jurisdiction before implementing mandate reforms, helping facilitate effective reform changes that provide meaningful direction to energy system actors.

1.2 How should independent, provincial/territorial pathway to decarbonization assessments be approached and scoped to inform net-zero energy roadmaps and coordinated system planning?

While nationally there have been a number of models that have shown pathways to achieving net-zero, there are far fewer detailed assessments that have looked at provincial pathways to decarbonization – and even fewer that are publicly-available. It is important to fill this gap. A growing number of provinces are in the process of updating their long term energy planning processes, including B.C., Ontario and New Brunswick. Of these three, only Ontario has formally [commissioned](#) an energy pathway assessment.

A pathway assessment is a study of the available cost-effective energy pathways to achieve net-zero objectives at a given point in time. It sits at the center of an orderly and affordable energy transition, helping to evaluate choices and trade-offs, identify no-regret options and bring key stakeholders together for an evidence based discussion about the future of a jurisdiction's energy mix.

Through a review of international examples, and conversations with Canadian experts, Clean Energy Canada has landed on five initial best practices that set good pathway assessments apart:

- **Independent:** While engagement with government and system operators will be essential, the pathway assessment should be led by independent experts to ensure all cost-effective net-zero pathways are considered, regardless of political preferences.
- **Evergreen:** Pathway assessments should be regularly recommissioned every 3-5 years to incorporate new information about technology costs, incorporate new data and policy decisions, and leverage new insights regarding specific industrial pathways.
- **Transparent:** A pathway assessment is about establishing a credible, independent process that facilitates discussion and information sharing between stakeholders. It must be published in a timely and accessible manner, allowing for scrutiny on the approach, assumptions, and outcomes.
- **Upstream:** A pathway assessment is not a replacement for utility-led resource planning, decision making around specific policies, or the creation of industry decarbonization pathways. Instead, a pathway assessment acts as an input to these processes, providing information for decision makers and planners regarding the trade-offs and cost-effectiveness of different energy transition pathways.
- **Relevant:** For a pathway assessment to be relevant to key decision makers and stakeholders, it must engage them early in the scenario design process, ensuring it is linked to the key questions they are confronting. This engagement should extend to

government and department staff, system operators, utilities, regulators, as well as non-governmental energy stakeholders.

1.3 What features should provincial governments build into their net-zero energy roadmaps to enable more effective planning and utility regulation?

Over the past several years, a growing number of jurisdictions have developed comprehensive energy strategies (or energy roadmaps) that complement their climate plans, including [Quebec](#), the [State of Washington](#), the [State of Western Australia](#), and most recently [New Brunswick](#).

Comprehensive energy strategies serve a number of functions. These include:

- Providing a comprehensive framework for how a jurisdiction can cost-effectively navigate the energy transition, seize economic opportunities and ensure energy governance and regulation is fit for purpose.
- Providing clear and timely guidance to all actors on the strategic actions that the jurisdiction is prioritizing in the short term. The decarbonization of the energy system is a long term project, but these plans can help identify urgent, or no-regrets steps to begin to make progress.
- Offering a vehicle to clearly identify and state the government's visions and objectives for all actors in the energy sector. Providing this direction is critical to address uncertainty, and ensure that energy reforms can be advanced across all of government and the economy.

While these energy plans are typically non-binding and serve as a vision document, they are written in such a way as to translate government priorities into actionable guidance for utilities and provide the legislative, regulatory or policy direction to ensure informed and aligned decision-making by regulators. Critically, these strategies, while specific, are intended to guide - not substitute for - the more detailed work of system planners, regulators and utilities. Utility and/or system-operator resource planning processes would be informed by a government's energy strategy, taking direction from the established priorities, but going into greater detail about how to best achieve the objectives and deliver on the actions set out by the government.

We recommend designing energy strategies using the following best practices:

- Include three key elements:
 - A vision that articulates the role and importance of clean energy in the jurisdiction,
 - objectives that help shape the decisions that are made by both government, energy and market actors, and
 - concrete action plans that identify the initial priorities and specific steps will be taken.

Articulating the government's vision and objectives for the energy sector help provide certainty for investments and energy actors alike, ensuring that everyone involved is clear about the goals we are working towards. While energy strategies are typically non-binding and serve as a vision document, they are written in such a way as to translate government priorities into actionable guidance for utilities, including through the introduction of new legislation or regulations where required. Action plans, for their part, move the strategy beyond words, identifying the most pressing issues and the steps that will be taken to address them.

- Ensure the energy strategy is not a one-off document. Whether it outlines a phased approach to development, establishes a strategy for a specific timeframe, or builds in processes for review and update, energy strategies typically establish a process that allows a jurisdiction to evolve their approach as they move through the energy transition. This is crucial. It allows a jurisdiction to set a long-term vision while still prioritizing the most pressing issues affecting their grid in a timely manner. Then as technologies mature, and costs and demand change, there are opportunities to adapt.
- Commit to comprehensive and ongoing stakeholder engagement. Industries both new and old will have unique decarbonization pathways that need to be accounted for. Expertise outside of government and from other jurisdictions can help shed light on approaches that have been successful. Canadians all have different experiences with energy - and energy poverty that should be accounted for. Clean energy offers an important opportunity to advance meaningful opportunities for economic reconciliation, requiring both proactive and ongoing engagement of Indigenous communities. Ensuring that the energy transition isn't something that happens to Canadians, but is something that Canadians embrace will require ongoing engagement.

Stakeholder engagement is also an important opportunity to align a jurisdiction's industrial strategy with its energy strategy. Globally the competition for clean investments is fierce, and the availability of clean, cheap, reliable electricity is a key competitive advantage. By prioritizing ongoing engagement with key industries to help inform their energy strategy, governments can identify the specific challenges industries face, develop an understanding and help inform the specific energy decarbonization pathway an industry charts and provide investment certainty for the availability of clean energy.

- Set out concrete targets for what the strategy seeks to accomplish. Whether, like the [United Kingdom](#), a roadmap adopts specific performance targets on the deployment of renewables or energy efficiency, or like [Western Australia](#) it chooses to identify clear timelines for priority reforms, the use of targets sharpens the strategy's focus and facilitates accountability.

- Integrate planning for different energy systems. As much as electricity will be at the center of the energy transition, an energy strategy needs to focus on clean energy in all its forms. The most obvious example is the role of natural gas in heating. From both an emissions and an affordability perspective, it is expected that electricity will increasingly displace other kinds of space heating, specifically efficient electric heat pumps that both heat and cool. Protecting affordability and energy security throughout the transition requires a thoughtful approach to this transition, necessitating coordination between both electric and natural gas planning processes.

The same is true for industrial processes, where some operations will rely on other forms of clean energy in addition to electricity, whether hydrogen or natural gas with carbon capture and storage. Understanding what is required - and is optimal - in different industrial pathways is critical to inform energy planning of all types. In both examples this isn't to limit the ambition that an energy strategy should strive to articulate, but rather the emphasis that needs to be placed on creating an energy - not electricity - strategy.

1.5 What conditions, if any, should be attached to provincial and territorial receipt of federal supports in order to facilitate a cost-effective decarbonization and build-out of Canadian electricity systems in line with climate goals?

Clean Energy Canada believes that the Clean Electricity investment tax credit (ITC), including any conditions required to take advantage of it, must be designed in a way that minimizes investment uncertainty and accelerates the deployment of capital into clean electricity projects across Canada. As such, any conditions considered should be simple for project proponents to understand and for government agencies to administer,

If conditions are attached to the Clean Electricity ITC, we recommend that the federal government:

- Clarify that provinces and territories are the “competent authorities” that will be required to take actions to satisfy such conditions.
- Impose the requirements laid out in Table 1 below on provinces and territories as conditions to unlock those ITCs.
- Issue public confirmation when each province or territory has met these requirements to provide certainty for all clean electricity project proponents, investors, and other relevant stakeholders in that province or territory who may be seeking to use the tax credit.
- Announce the conditions the federal government plans to attach to the clean electricity ITCs, if any, as soon as possible—even if the full suite of design and implementation details are still being finalized—so provinces and territories have time to take the necessary actions before the tax credit eligibility window opens.

Table 1: Proposed Clean Electricity Investment Tax Credit Conditions

Requirement <i>(i.e. in order for entities in a province or territory to be eligible, the province must do the following)</i>	Threshold <i>(i.e. to determine whether a province or territory has met the requirement, the province or territory should submit evidence that the following has been executed)</i>
Commission an independent pathway assessment.	A pathway assessment <i>has been commissioned</i> .
Provide a directive that requires public sector utilities, system-operators and regulators to integrate achieving net-zero as one of their core objectives.	A formal directive <i>has been provided</i> by the province/territory to integrate net-zero as one of their planning objectives and the province/territory <i>has inquired</i> whether more comprehensive legislative or regulatory reforms are required to properly do so.
Initiate the creation of an energy strategy to guide policy and investments in line with net-zero targets.	The province <i>has initiated</i> the development of an energy strategy.