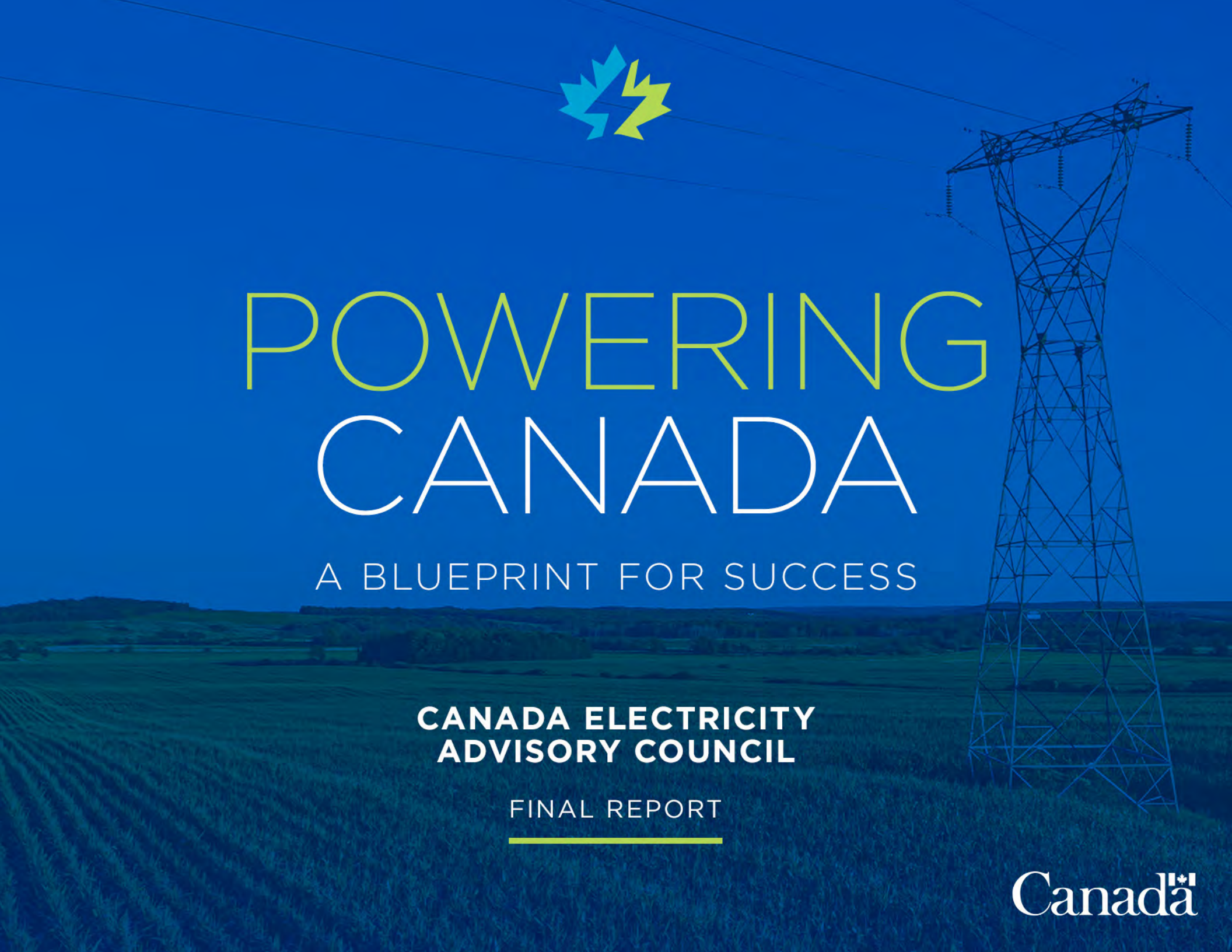

POWERING CANADA

A BLUEPRINT FOR SUCCESS

CANADA ELECTRICITY ADVISORY COUNCIL

FINAL REPORT

Canada

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FINAL REPORT - MAY 2024

Canada

Aussi disponible en français sous le titre : L'avenir électrique du Canada : un plan pour réussir la transition.

Cat. No. M134-72/2024E-PDF

ISBN 978-0-660-72119-4

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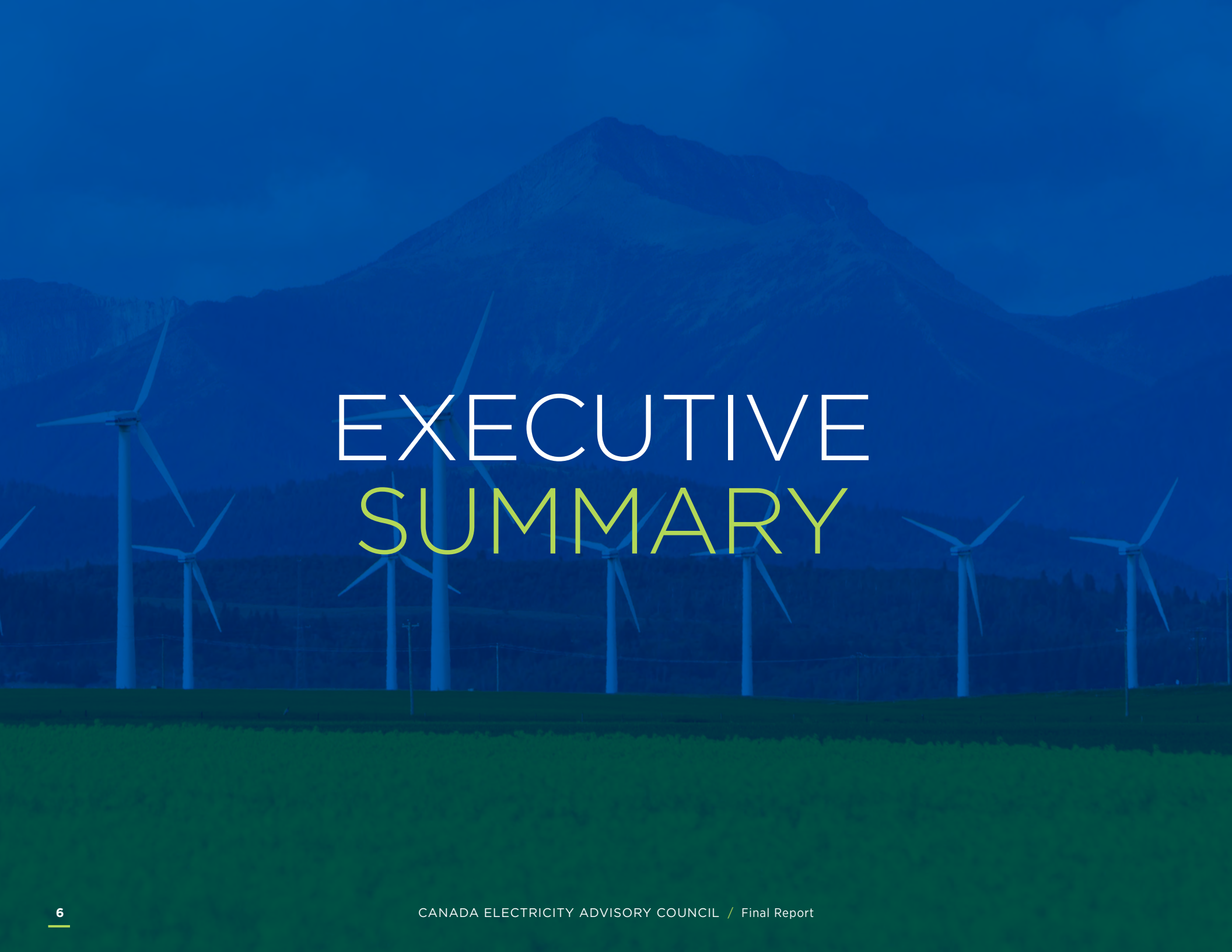


EXECUTIVE SUMMARY

CANADA'S ELECTRICITY STORY

Canada has a storied history of bold moves in electricity.

From the earliest innovations in the 1880s, including the country's first hydropower plants, power lines and streetlights, to a wave of electrification in the second half of the twentieth century and major strides toward decarbonization that have characterized the past two decades, Canada has rarely shied away from big challenges in electricity.

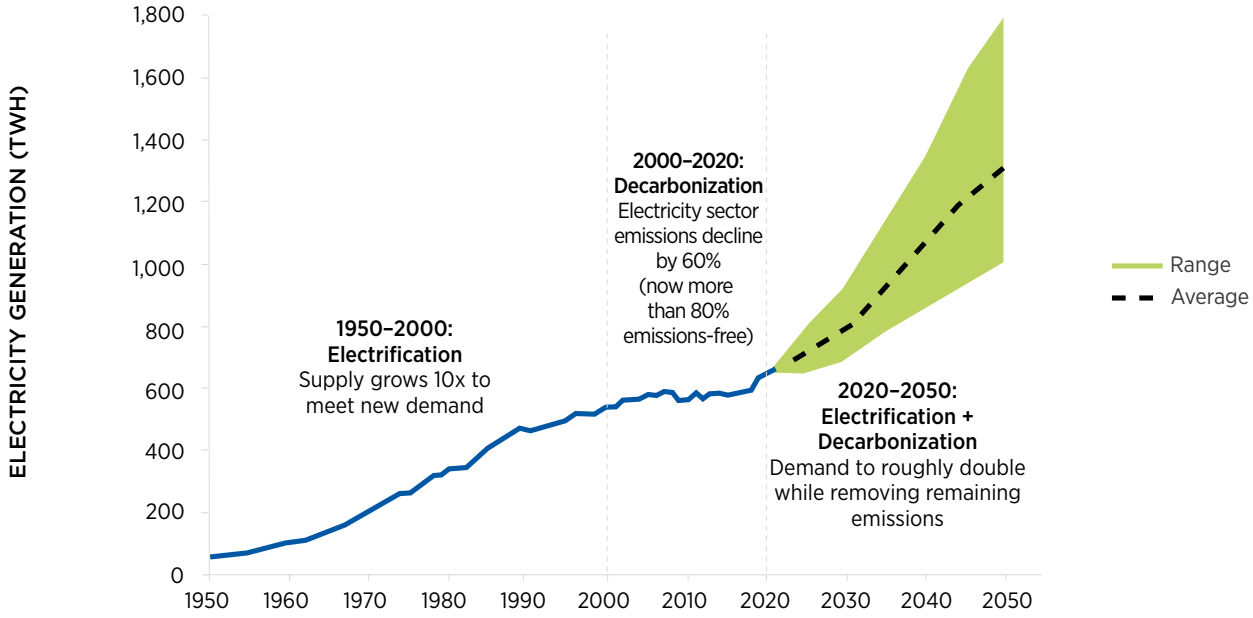
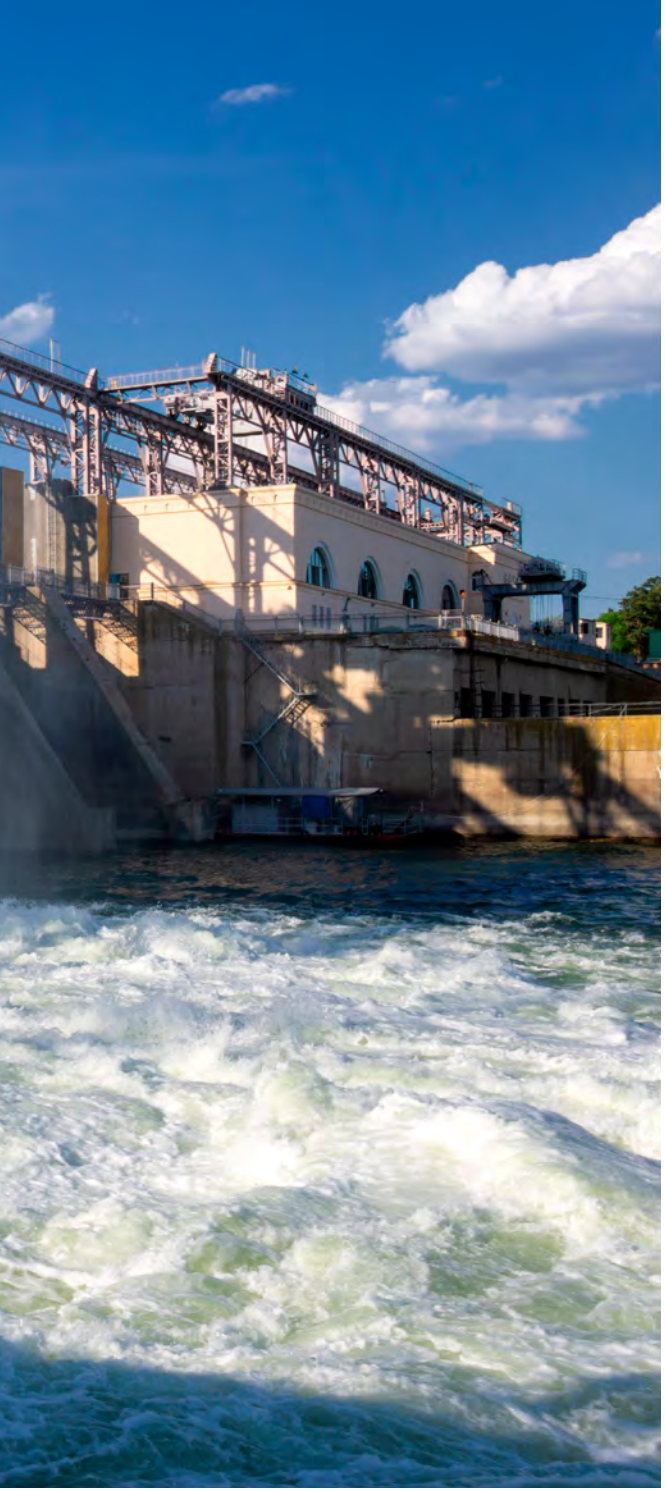


FIGURE 1: 100 YEARS OF ELECTRICITY GENERATION IN CANADA

Now, Canada is about to embark on another great challenge: completing the decarbonization of its existing grids while vastly expanding electricity production and use. This report is about the pragmatic approaches Canada needs today to succeed in this endeavour.



THE COUNCIL

The Minister of Natural Resources convened the Canada Electricity Advisory Council ("the Council") in May 2023 to advise on policies to enable the electricity sector to play its pivotal role in Canada's transition to net zero.

The Council is an independent body of 19 electricity sector leaders from every region in Canada.

During its 12-month mandate, the Council:

- Held **87 meetings**, including full Council and Working Group meetings;
- Heard from **117 stakeholders**, through 66 private briefings and 72 written submissions; and
- Obtained full consensus on **28 key recommendations** to the federal government.

As the recommendations detailed in this report attest, the Council has found that there can be a viable route to achieving these goals – one that respects regional disparities, safeguards reliability, maintains affordability and cost-competitiveness, respects Indigenous rights, and includes Indigenous communities.

To be sure, there will be formidable challenges, risks and trade-offs along the way. But the opportunities for Canada's economy — and the risks to future generations should the country fail in this endeavour — are far more substantial.[6]

6 The Council believes that while the federal government has a crucial role to play in enabling a successful transition, primary authority over electricity lies with the provinces and territories. As the Council was named by the Government of Canada, it chose to limit its recommendations to those the federal government can implement within its authorities.

A DUAL CHALLENGE

To achieve Canada's goals, the provinces and territories — the ultimate authorities over its electricity systems — will need to tackle a dual challenge: completing the **decarbonization** of existing electricity systems, while also rapidly **growing** capacity to meet new needs in everything from transport to buildings to industry.

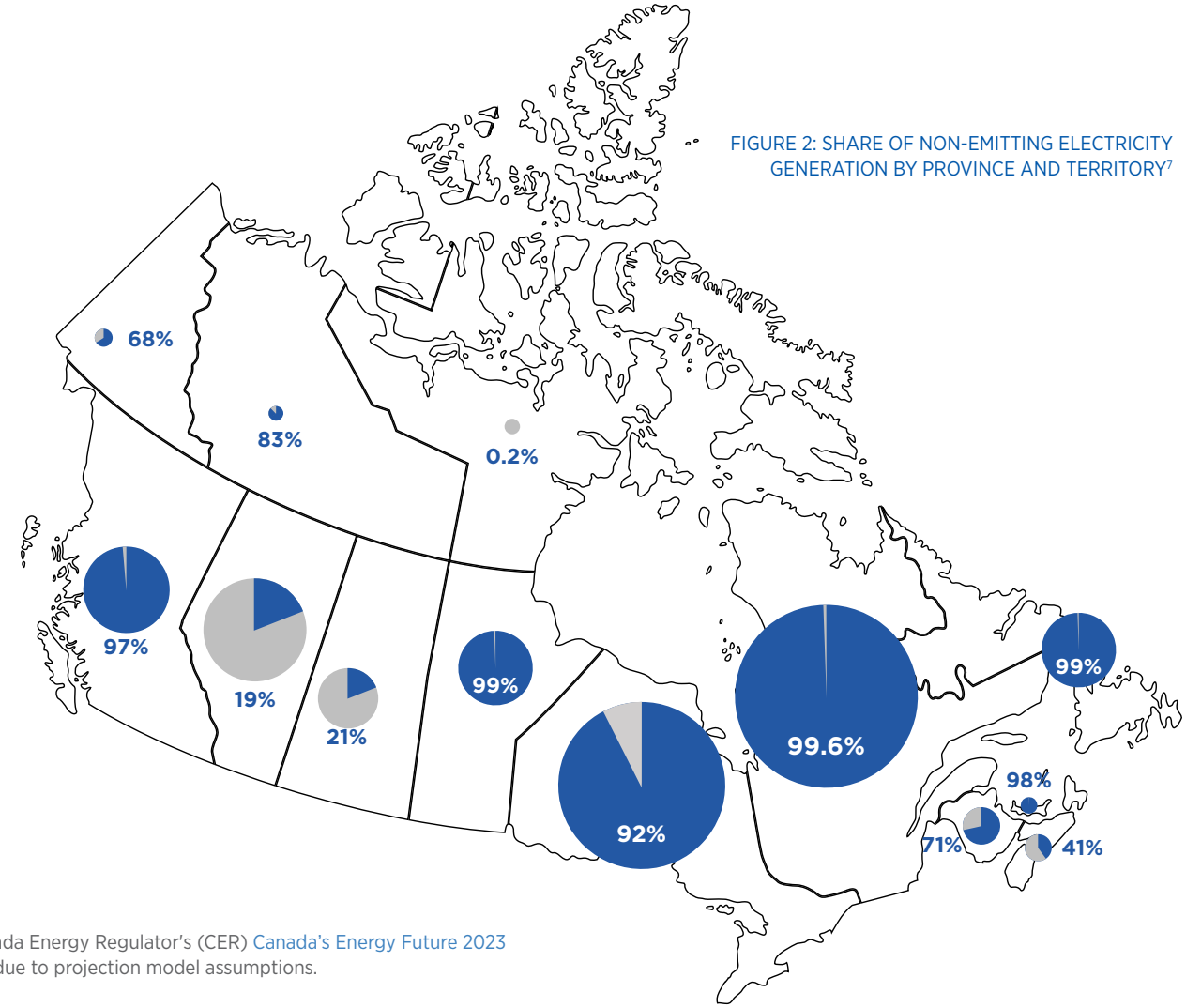
Decarbonization

Approximately four in five Canadians live in provinces where electricity is already largely decarbonized (more than 90 percent non-emitting). In this regard, Canada as a whole is already well ahead in the global race to clean electricity.

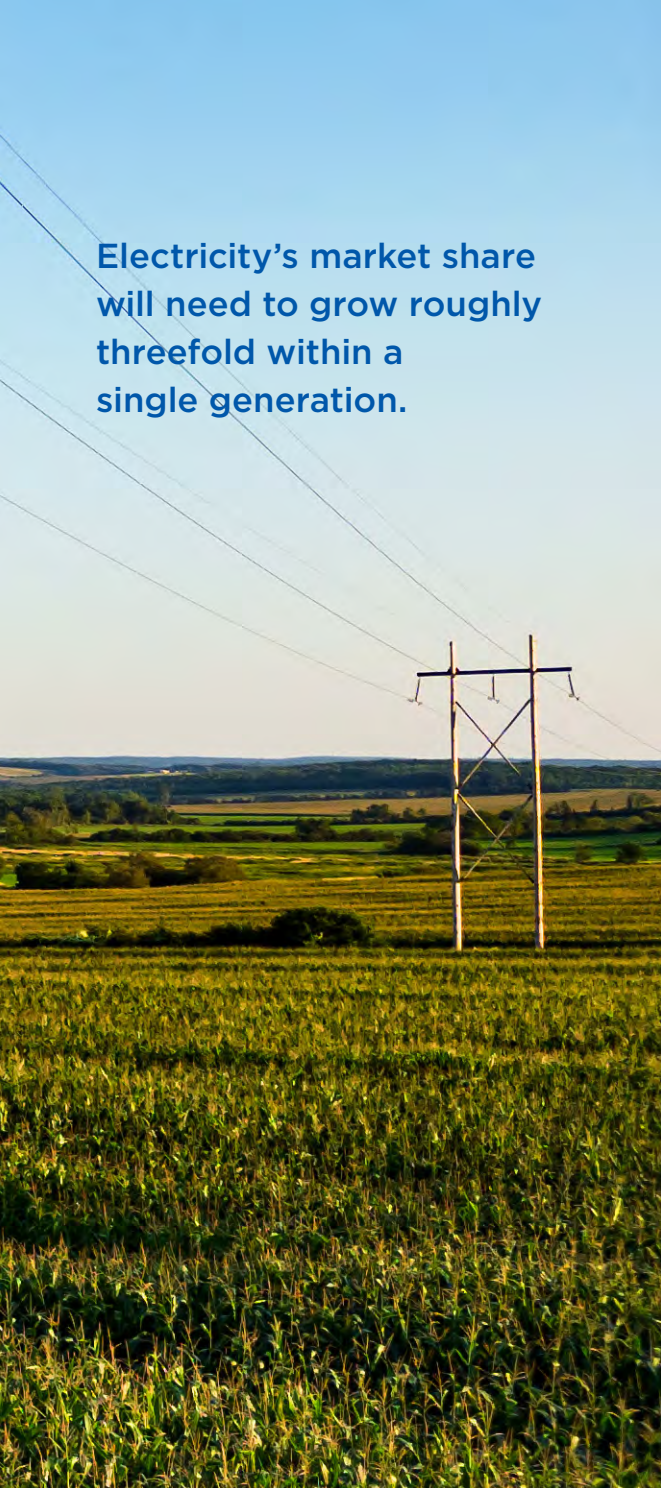
But for some regions of the country, the challenge of decarbonizing existing grids is daunting, despite significant progress in recent years. This is the case in Alberta, Saskatchewan, Nova Scotia and remote communities of the North, which have historically relied on fossil fuels for the bulk of their power generation.

Working with these regions decarbonize their existing power systems is one challenge Canadians must work together to overcome.

FIGURE 2: SHARE OF NON-EMITTING ELECTRICITY GENERATION BY PROVINCE AND TERRITORY[7]



7 The figure is based on projected values for 2022 from the Canada Energy Regulator's (CER) Canada's Energy Future 2023 report, and in some cases may not align with historical values due to projection model assumptions.



Electricity's market share will need to grow roughly threefold within a single generation.

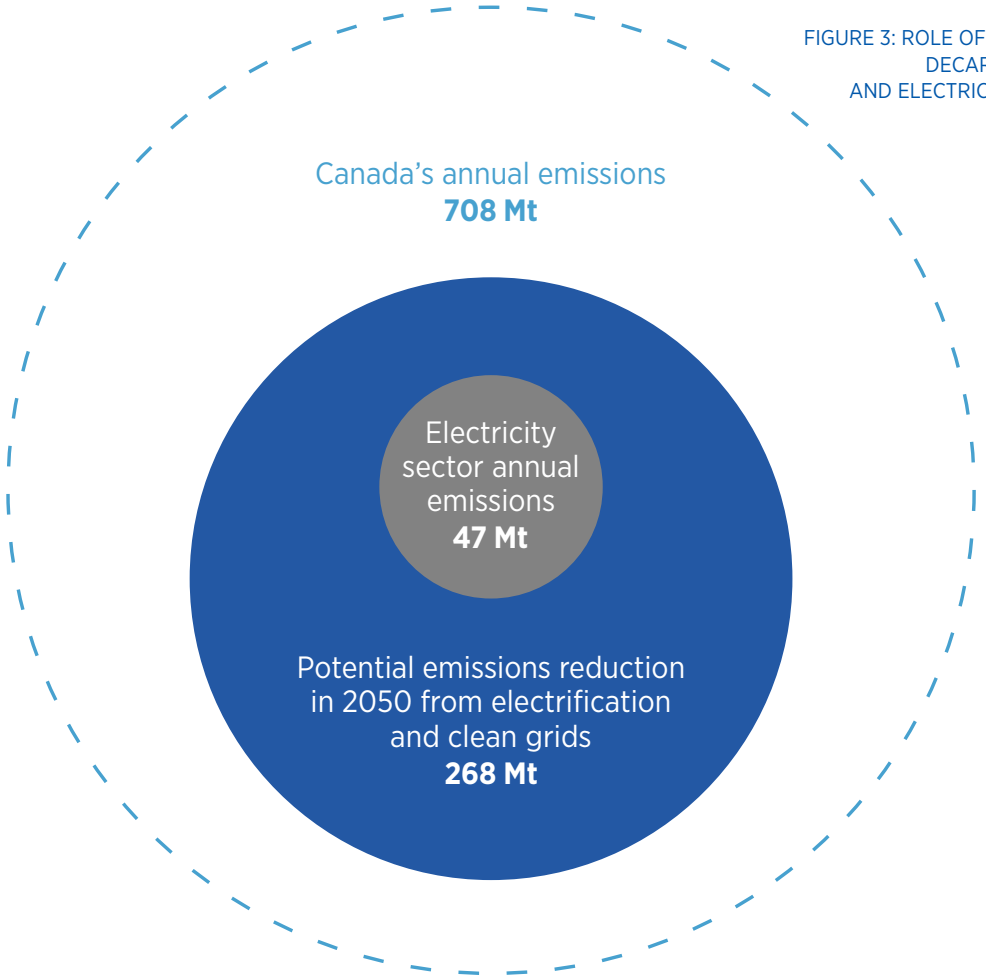
Rapid Growth

The other challenge facing the country is one of growth. If Canada is to achieve its long-term goal of net-zero emissions across all sectors, a rapidly expanding supply of clean power will be essential.

Electricity's share of Canada's energy consumption is currently around 20 percent. Most studies find that to achieve the country's goals in the most cost-efficient way, **electricity's market share will need to grow roughly threefold within a single generation**. At that point, it would be the country's primary form of energy supply.

This growth challenge – not dissimilar to the wave of growth that took place in the last half of the twentieth century – will require strong leadership and collaboration across Canada.

FIGURE 3: ROLE OF ELECTRICITY DECARBONIZATION AND ELECTRICITY GROWTH



FOUR CORNERSTONES OF SUCCESS

The Council has built its recommended policy measures on four cornerstones, which together form the foundation of a successful electricity transition:

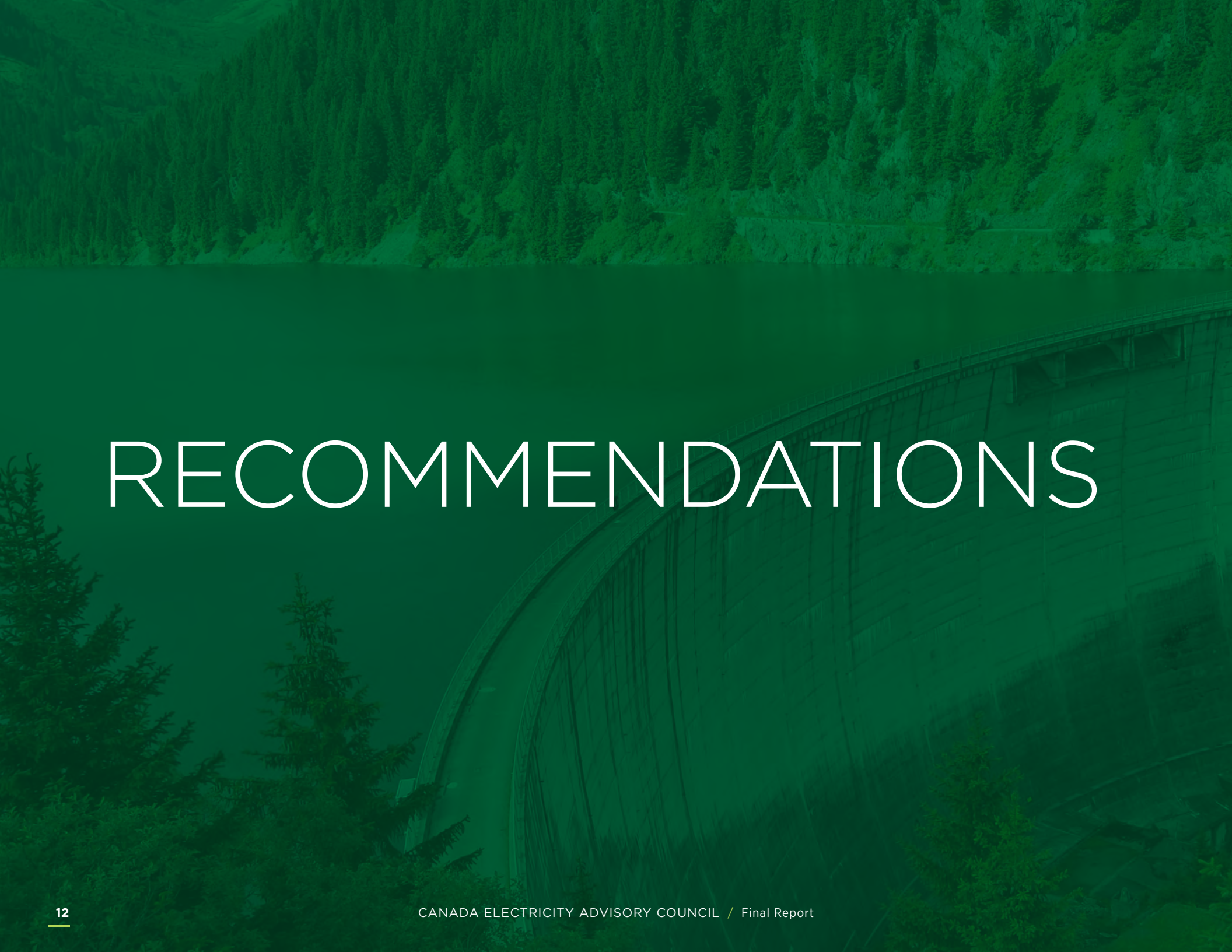
1 **Speed:** To achieve its goals, Canada needs to rapidly expand its clean electricity infrastructure. That simply will not happen without measures designed to attract capital, involve Indigenous Nations and communities, and, critically, recalibrate project review and approval processes across the country and at every level of government to enable more clean electricity.

2 **Affordability:** If it is to succeed, the transition must be affordable and cost-competitive. Analysis prepared for the Council suggests this is possible, in large part because of the fuel savings that new electricity will create. But the path is narrow, and a wide array of pragmatic, thoughtful measures will be needed to attract the necessary capital, reduce project friction, and help Canadians use electricity more efficiently.

3 **Reliability:** Ensuring the reliability of Canada's electricity systems is vital during this accelerated transition. Doing so will require greater flexibility in decarbonization policies, especially for those regions that are currently most reliant on fossil-fueled power plants, as well as financial support for investments that enhance system reliability.

4 **Indigenous Participation:** Much of Canada's new electricity infrastructure will be built on Indigenous lands. By embracing Indigenous Nations and communities as full partners in these projects, Canada has a unique opportunity to begin repairing the unequal relationship that has long dominated energy and resource development, and to harness a powerful force for reconciliation.

These four cornerstones are deeply intertwined – maximizing Indigenous participation, for example, can improve both the speed and the affordability of the transition – and pursuing all four with a balanced approach will be vital for Canada's success. And they share a common focus: **driving down costs to make the transition as rapid and cost-effective as possible.**



RECOMMENDATIONS

The Council's recommendations to the federal government follow four critical themes, all of which are aimed at improving the electricity transition's speed, reliability, affordability and Indigenous inclusion.

Canada's challenge: to ensure an affordable, reliable and inclusive transition

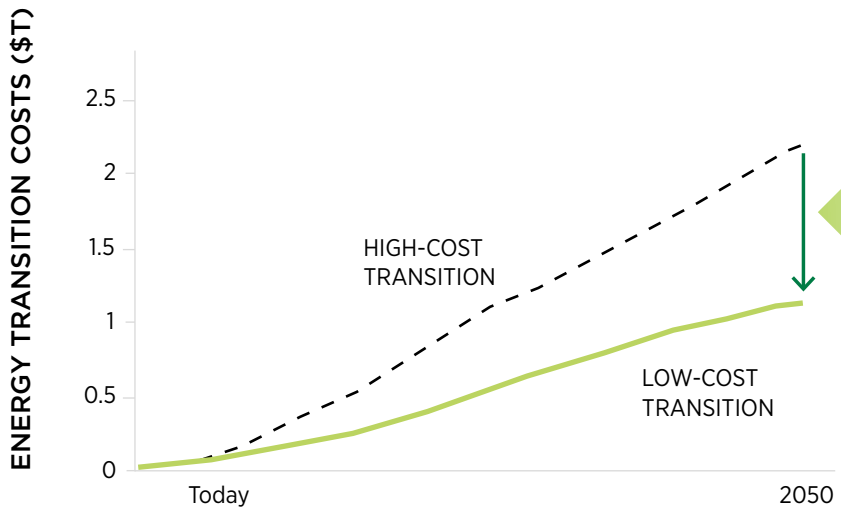


FIGURE 4: THE STEPS FOR A MORE AFFORDABLE, RELIABLE, AND INCLUSIVE TRANSITION

Below are highlights of the key recommendations. In the full Recommendations section (see pages 69 to 156), **each recommendation is accompanied by more substantive and specific Implementation Details**.

The steps for a more affordable, reliable, and inclusive transition:

ALIGN on goals

ENABLE the build

SUPPORT the transition

SAVE energy to lighten the load

ALIGN on Goals

The energy and policy landscape in Canada appears robust, but the array of overlapping policies at three levels of government is hindered at present by insufficient clarity, consistency and alignment. The Council is recommending a series of measures can help create much clearer alignment on Canada's path forward.

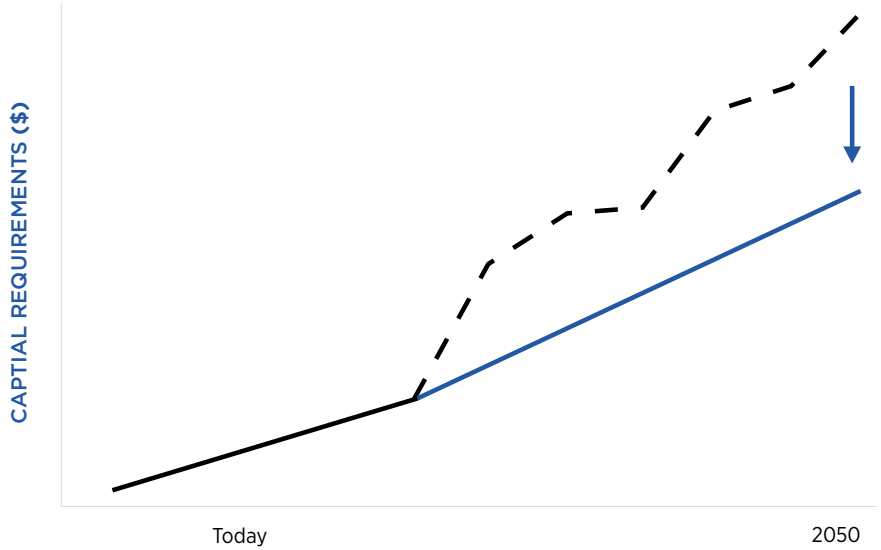


FIGURE 5: ILLUSTRATIVE DIRECTIONAL IMPACT OF 'ALIGN ON GOALS' RECOMMENDATIONS

Aligning policies, mandates, and plans offers greater certainty to decision-makers and supports a lower-cost transition for all.

To ALIGN on goals, the Council recommends:

- **Policy Clarity Now and in the Future:**
  The federal government should expedite clarification of critical electricity policy rules (Recommendation 1). To further enhance clarity and equip decision-makers, the federal government should encourage energy roadmaps at the provincial and territorial levels (Recommendation 2), informed by pathway assessments (Recommendation 3).

- **Mandates Consistent with Climate Goals:**
  The federal government should lead by example and ensure that the mandates of relevant federal authorities integrate net-zero goals (Recommendation 4) to ensure that authorities are not working at cross purposes.

- **Flexibility for Jurisdictions Across Canada:**
  In recognition of the diverse needs and contexts across Canada, the federal government should lean into flexibility in defining key rules (Recommendation 5), including revising clean electricity investment tax credit (ITC) conditionality to focus on energy roadmaps (Recommendation 6).

- **Data Transparency and Trust:**
  The federal government should drive the availability of open and transparent data and modeling (Recommendation 7), as well as publish key progress indicators (Recommendation 8) to support stakeholders in making evidence-based decisions and enhancing public trust.

ENABLE the Build

Canada simply cannot keep pace with demand for clean electricity without systemic reform of the tangle of current approval processes. While many of these fall within provincial and territorial jurisdiction, the federal government can both lead by example and play an important role in the reconfiguration of its own processes to enable timely build-out of the country's electricity systems.

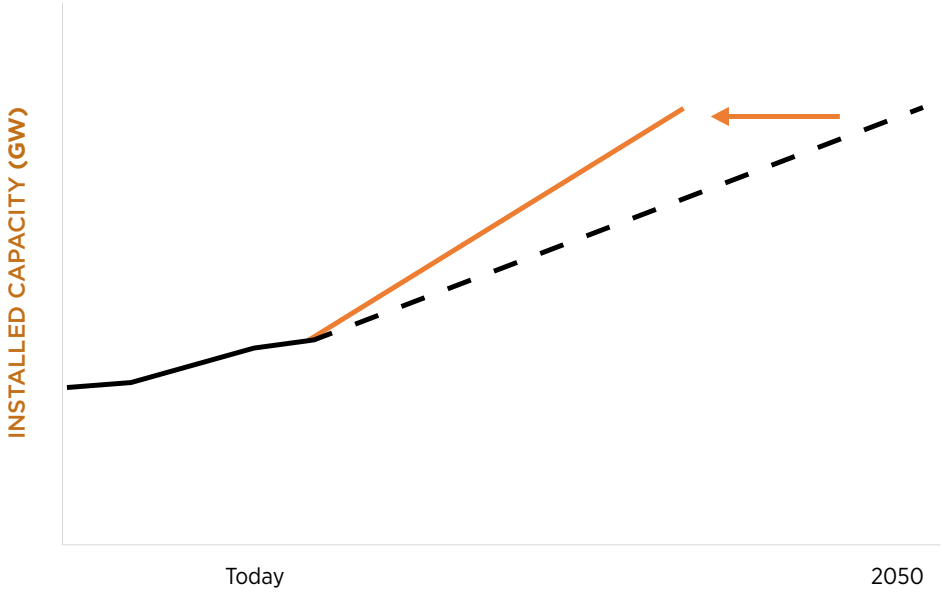


FIGURE 6: ILLUSTRATIVE DIRECTIONAL IMPACT OF 'ENABLE THE BUILD' RECOMMENDATIONS

Removing barriers to build clean electricity projects, including for permitting, capital attraction, and Indigenous participation, is essential for achieving climate targets, while protecting affordability and reliability.

To ENABLE the build, the Council recommends:

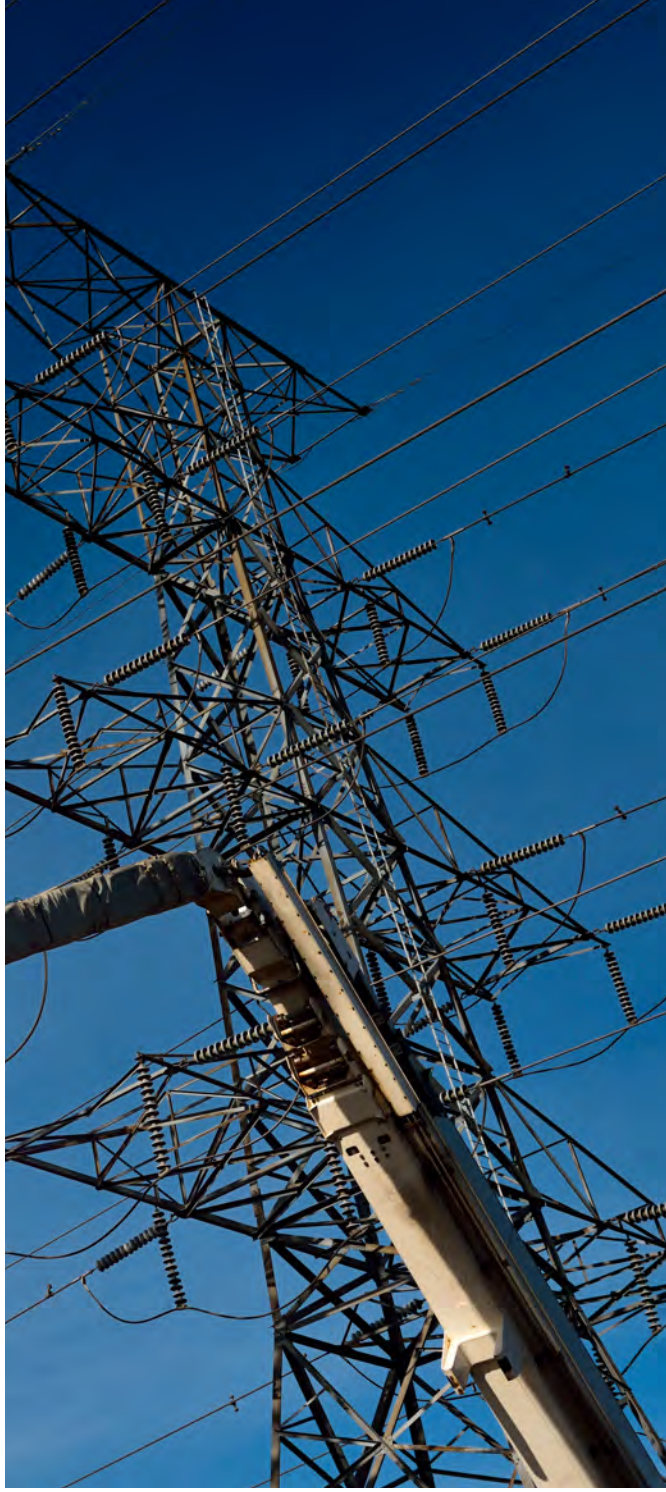
- **A Champion to Reform Clean Electricity Approvals:**
  The federal government should designate an accountable champion to simultaneously: (a) lead the charge on multi-agency reform to streamline, accelerate and eliminate redundancies; and (b) adopt a systemic approach to identifying and supporting Clean Electricity Projects of Canadian Interest (Recommendation 9).

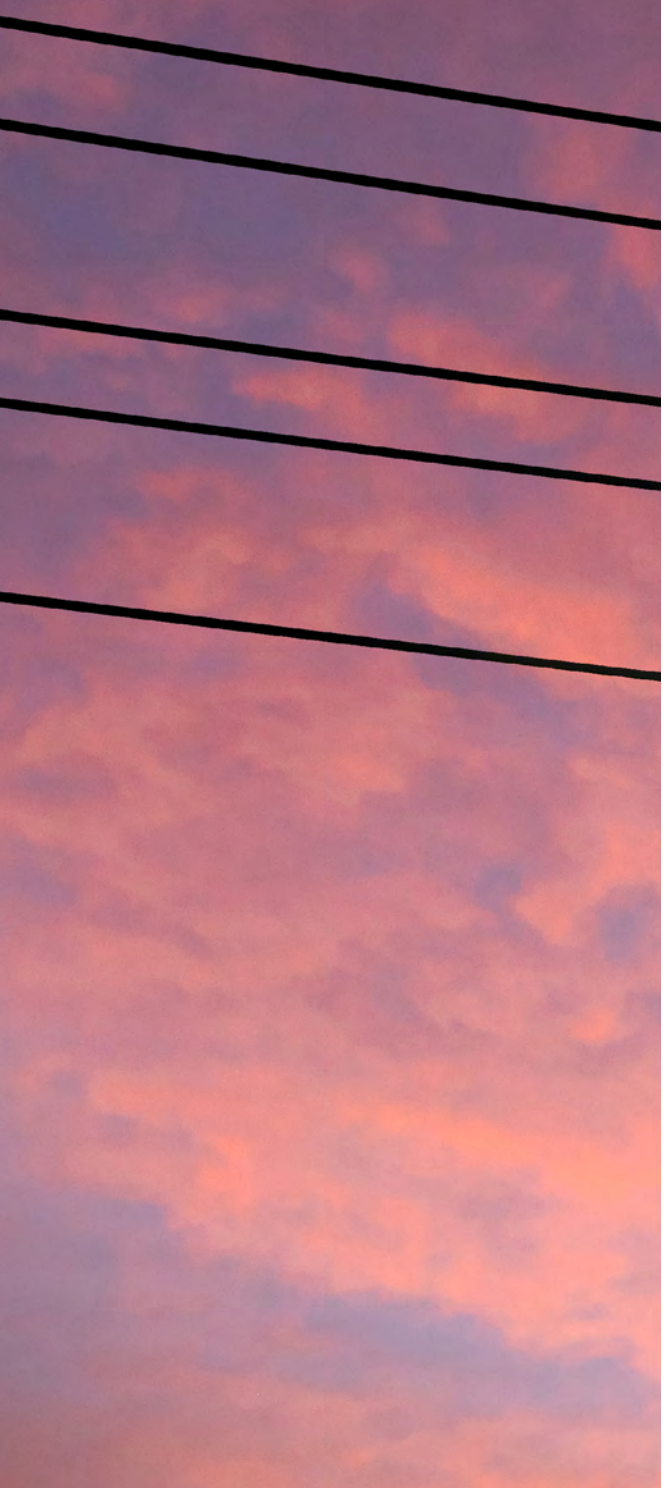
- **A Risk-Based Approach to Project Reviews:**
  The federal government should move to a risk-based approach to project reviews, streamlining their scoping (Recommendation 10) and adopting a compliance-based framework where possible (Recommendation 11), thereby demonstrating the increase in pace the transition requires.

- **Proactively Eliminating Duplication and Leveraging Crown Lands:**
  The federal government should work with provinces to eliminate duplication in project assessments by adopting equivalency mechanisms wherever possible (Recommendation 12). It should also designate more Crown lands for expedited clean electricity project development (Recommendation 13).

- **Clarifying Indigenous Consultation and Engagement:**
  The federal government should assist developers in understanding Indigenous rights as well as in defining their duty to consult Indigenous Nations and communities (Recommendation 14).

- **Paving The Way for Capital and Labour:**
  The federal government should align financial, tax, labour and trade policies with net-zero goals (Recommendation 15), establish a one-stop shop for federal project support (Recommendation 16), and harmonize electrical codes and standards (Recommendation 17).





SUPPORT the Transition

Although the switch to clean power is likely to be affordable for the average Canadian, that average can hide unevenly distributed costs and benefits. For some Canadians – particularly in fossil-fuel-reliant provinces and territories, in lower-income households, and in Indigenous and remote communities – the challenge will be greater. The federal government should provide crucial support to address fairness and ensure that the overall costs and benefits of the transition are equitably shared.

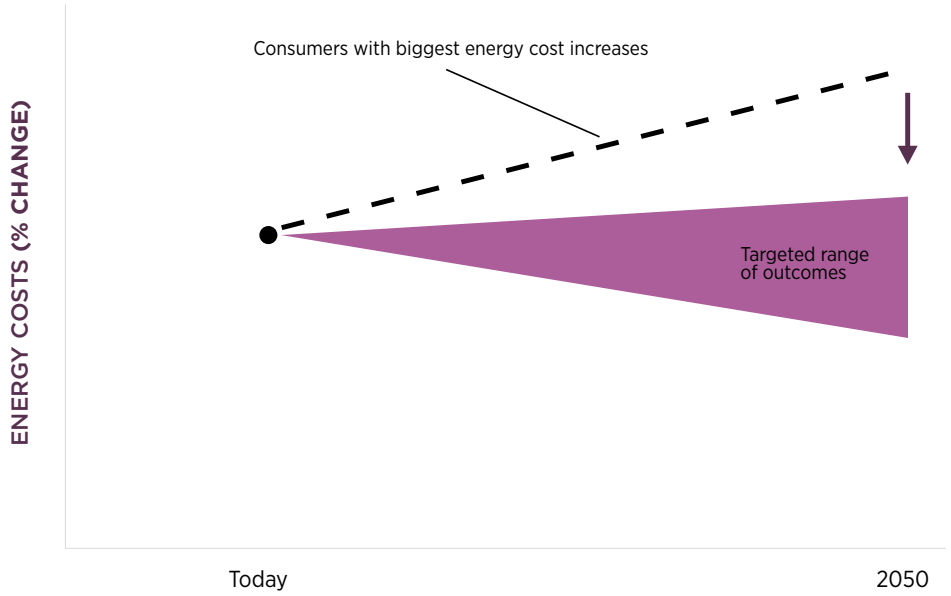


FIGURE 7: ILLUSTRATIVE DIRECTIONAL IMPACT OF 'SUPPORT THE TRANSITION' RECOMMENDATIONS

Targeted federal funding can lower costs for all Canadians, while reducing the uneven distribution between households.

To SUPPORT the transition, the Council recommends:

- **Optimizing Investment Tax Credits (ITCs):**
  The federal government should bring a series of changes to clean electricity ITC programming, including adopting more pragmatic conditionality criteria, expanding to intra-provincial transmission, and adjusting credit levels (Recommendation 18). These changes are designed to enable a fairer distribution of costs and benefits.

- **A Framework for Inter-regional Grid Infrastructure:**
  The Minister of Energy and Natural Resources should engage counterparts at the 2024 Energy and Mines Ministers' Conference (EMMC) to jointly develop, and table in time for the EMMC in 2025, a collaborative framework to identify and financially support inter-regional electricity transmission projects. Using the European Union's Projects of Common Interest (PCIs) framework as a starting model, it should outline governance, cost allocation, and funding components (Recommendation 19).

- **Support for Indigenous, Northern, and Remote Communities:**
  The federal government should target funding toward addressing the challenges unique to these communities, providing a coordinated approach to economic reconciliation with Indigenous communities (Recommendation 20) and addressing policy certainty and support in Northern and remote communities (Recommendation 21).

- **Targeted Support for Low-Income Canadians:**
  The federal government should significantly increase its initial commitment to fund provincial and territorial energy efficiency programs directed at lower-income households (Recommendation 22).

SAVE Energy to Lighten the Load

Accelerating the build-out of clean electricity to meet the growing needs of a net zero economy is a daunting task. The scope and scale of that task – and the requisite capital investments – can be reduced by significant improvements in energy efficiency and demand flexibility.

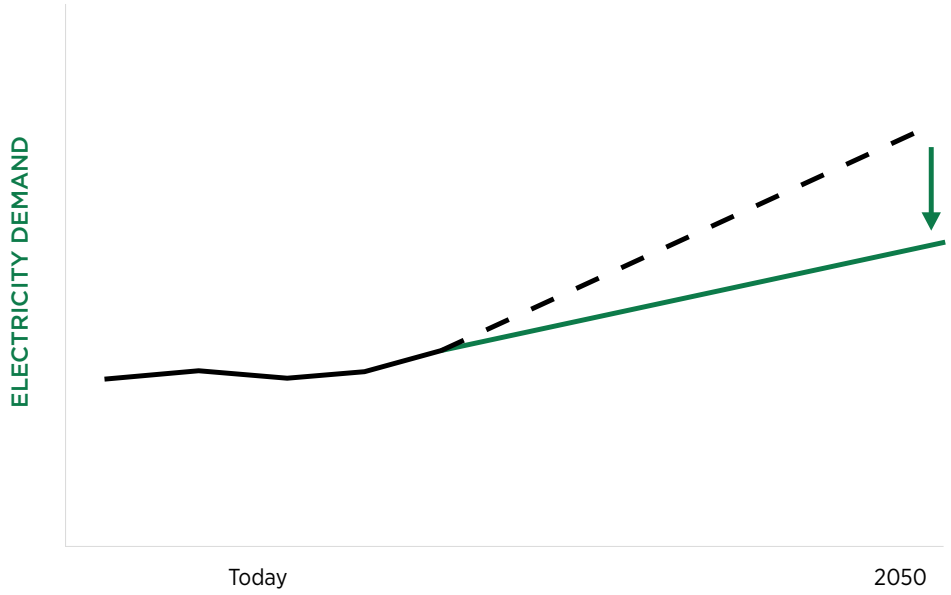


FIGURE 8: ILLUSTRATIVE DIRECTIONAL IMPACT OF 'SAVE ENERGY TO LIGHTEN THE LOAD' RECOMMENDATIONS

Energy efficiency and load flexibility reduce electricity demand, minimizing investment needs, reducing consumer bills and enhancing reliability.

To SAVE energy to lighten the load, the Council recommends:

- **Accountability and Consistency:**
  The federal government can reinvigorate its efforts and take on a national leadership role by creating an energy efficiency accountability framework (Recommendation 23) and linking federal investments in housing to the highest energy saving standards (Recommendation 24).
- **Federal Support for Demand Management:** The federal government should prioritize support for demand management, by refocusing existing funding toward demand-side solutions such as energy efficiency, demand flexibility, and grid modernization (Recommendation 25).
- **Maximizing Federal Levers:** The federal government should make maximum use of its own levers, notably energy efficiency equipment standards (Recommendation 26), building codes (Recommendation 27) and procurement rules (Recommendation 28).

The Linchpin: Pragmatism and Collaboration

Electricity is poised to play an outsized role in Canadian society and in its economy, driven by a new wave of rapid growth in supply and demand for clean power. If the country gets this right, Canada will emerge from the energy transition on solid footing, having reinforced its position in the post-transition global economy.

The Council has laid out a blueprint of actions to that effect that are rooted in pragmatism. Taken as a whole, they offer a carefully balanced mix of clear policy direction, reductions in the regulatory muddle that is slowing the pace of growth, targeted funding to address the most urgent needs and ensure a fair transition for all Canadians, and new rules to dramatically reduce energy waste to make the transition more achievable.

These actions are driven by a crucial assumption: that despite an increasingly polarized political environment, Canadians can set aside their differences and work together toward a common outcome. Ultimately, that may be the most critical action of all.

TABLE OF RECOMMENDATIONS

ALIGN on Goals			Tools				Benefits			
Coloured Icon = Primary Tool / Benefit Outlined Icon = Secondary Tool / Benefit			Fiscal	Legal	Idea Sharing	Institutional	Climate	Affordability	Reliability	Indigenous
Policy Clarity Now and in the Future	1	Expedite clarification of critical electricity policy rules		●		○	○	●	●	○
	2	Encourage energy roadmaps	●	●	○		○	●	●	○
	3	Encourage pathway assessments to inform energy roadmaps	●		○		○	●	○	○
Mandates Consistent with Climate Goals	4	Align mandates of relevant authorities with net-zero goals		●	○	○	●	○	○	
Flexibility for Jurisdictions Across Canada	5	Prioritize flexibility in policy making				●	○	●	●	○
	6	Focus ITC conditions on energy roadmaps	●				○	●	●	○
Data Transparency and Trust	7	Drive open and transparent data and modelling	○	○	●	○	○	○	○	
	8	Establish indicators to track national progress			●	●	○	○	○	○

ENABLE the Build			Tools				Benefits			
Coloured Icon = Primary Tool / Benefit Outlined Icon = Secondary Tool / Benefit			Fiscal	Legal	Idea Sharing	Institutional	Climate	Affordability	Reliability	Indigenous
A Champion to Reform Clean Electricity Approvals	9	Designate an accountable champion to accelerate electricity project approvals				●	○	●	●	
A Risk-Based Approach to Project Reviews	10	Streamline scoping of clean electricity project reviews				●	○	●	●	
	11	Move to a compliance-based approvals framework where possible		○		●	○	●	●	
Proactively Eliminating Duplication and Leveraging Crown Lands	12	Conclude equivalency agreements to limit duplication with provinces		●			○	●	●	
	13	Proactively develop federal crown lands		●			○	●	●	○
Clarifying Indigenous Consultation and Engagement	14	Enhance clarity and awareness of expectations for Indigenous consultations			●	●				●
Paving the Way for Capital and Labour	15	Align financial, tax, labour and trade policies with net zero		●		○	○	●	○	
	16	Establish a one-stop shop for federal financial support				●	○	●	○	
	17	Harmonize electrical codes and standards	●				○		●	

TABLE OF RECOMMENDATIONS

SUPPORT the Transition			Tools				Benefits			
Coloured Icon = Primary Tool / Impact Outlined Icon = Secondary Tool / Impact			Fiscal	Legal	Idea Sharing	Institutional	Climate	Affordability	Reliability	Indigenous
Optimizing Investment Tax Credits	18	Align ITC programming with net-zero objectives		●			○	●	○	○
A Framework for Inter-Regional Grid Infrastructure	19	Construct a framework to support inter-regional electricity transmission projects	●		●			○	●	
Support for Indigenous, Northern and Remote Communities	20	Advance economic reconciliation with Indigenous Nations	●	○			○			●
Targeted Support for Low-Income Canadians	21	Support the North and remote communities	●		○			○	○	●
	22	Expand funding for energy efficiency programs directed at lower-income Canadians	●		○	○	○	●	○	

SAVE Energy to Lighten the Load

Coloured Icon = **Primary Tool / Impact**
Outlined Icon = **Secondary Tool / Impact**

			Tools				Benefits			
			Fiscal	Legal	Idea Sharing	Institutional	Climate	Affordability	Reliability	Indigenous
Accountability and Consistency	23	Create an energy efficiency accountability framework		○		●	○	○	○	
	24	Link federal investments in housing to the highest energy-saving standards				●	○	●	○	○
Federal Support for Demand Management	25	Prioritize demand management in federal supports	●		●		○	●	○	
Maximizing Federal Levers	26	Update appliance and equipment standards		●			○	●	○	
	27	Advance building code modernization	●			●	○	●	○	
	28	Expand the Greening Government Strategy				●	●			

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LETTER FROM THE COUNCIL CHAIR

Canadians come at energy from different perspectives. Some are primarily concerned about affordability and competitiveness, others about the effects of long-term climate change on our children's future. For many, it's a matter of reliability — keeping the proverbial lights on. And for many Indigenous people, it's about undoing a legacy of energy development happening to — not with or by — their communities.

All of these perspectives matter. All are legitimate. Yet in our increasingly polarized debates, how often do we jump to assuming others are "wrong" or "don't care" about our perspective, or just "don't get it"?

Serving as chair of this Council has been a tremendous honour. And a large part of that honour has been working alongside its esteemed members who, like a microcosm of Canada, came at this challenge from varied perspectives.

My own perspective is simple: Energy is the backbone of economies and societies the world over. It always has been. And the world is now undergoing a rapid, arguably unprecedented energy transition.

How we navigate that transition — deliberately or not, thoughtfully or not, collaboratively or not — will determine how we emerge on the other side: as winners or losers in a historic, global shift. Our kids will have us to thank — or to blame — for the outcome.

As my daughter likes to say, "It's better to try than not to try."

Arguably the single biggest part of this transition comes down to electricity. Why? Because electricity can be produced emissions-free, can move across vast distances, can be produced in a multitude of ways using natural resources available in every region of the country, and can be consumed with extreme efficiency. As our report lays out, the challenge before us is twofold:

1. to finish decarbonizing our existing grids (we're already ahead of most of the world on that), and
2. to rapidly expand them to deliver the clean electricity that Canadians will need in the decades to come.

As the Council deliberated on the steps necessary to set Canada's electricity transition on a path to success, we arrived at a firm consensus on three clear parameters for our work:

The first was a commitment to **pragmatism**. We understand that electricity is a vital daily need for all Canadians, and that it is delivered from a diverse and increasingly complex array of systems. Our recommendations could be ambitious, but they cannot be simplistic – there are simply no easy answers, silver bullets or one-size-fits-all solutions. Rather, to be effective they would have to be grounded in current realities, take stock of real-world complexities, and lead to viable near-term actions. There is undeniable urgency to act in the face of climate change, but no action will be sustainable if it does not safeguard the affordability and reliability that Canadians have come to rely on.

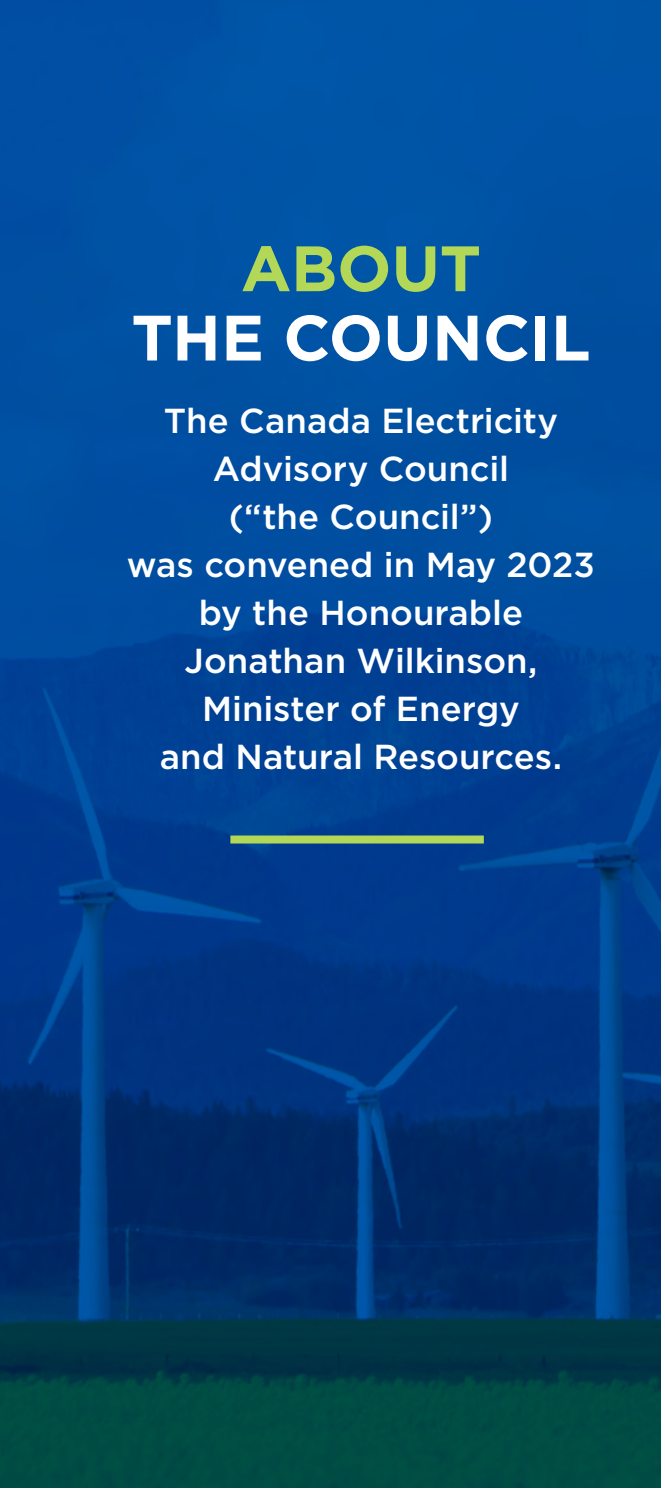
We have also come to see not just the value but the necessity in **collaboration**. This Council has drawn its membership from every region of Canada and from a diverse range of backgrounds. At times it has felt like a microcosm of Confederation itself, with differing, competing and even clashing views and perspectives. Yet with pragmatism as our guide, we developed a spirit of mutual respect for the multitude of perspectives that were brought to the table. The fact we were able forge consensus on such detailed recommendations is a testament to what true collaboration can produce. In the end, while Council members' respective provinces and territories may face different challenges, we are all members of the same Team Canada.

Above all, this Council has been driven by a powerful desire to **get this right**. The energy transition is a once-in-a-generation opportunity to chart the best possible future path for Canada's electricity systems, which will support Canadians in their daily lives for generations to come. We have focused on a route to net zero aimed at **quickening the pace** and optimizing for **reliability**, **affordability** and **Indigenous participation**. We believe that these four foundational principles will serve all Canadians as we come together to embrace this challenge head-on.

Some will critique this report. It is certainly not perfect; it will not solve every challenge; in choosing to be grounded in today's reality, it may not be as bold as some would like.

Yet it is my sincere belief that the vision and recommendations herein reflect a pragmatic, considered, achievable path forward. I am proud of the work that this Council has completed, and hope that its recommendations serve Canada for years to come.

PHILIPPE DUNSKY



ABOUT THE COUNCIL

The Canada Electricity Advisory Council ("the Council") was convened in May 2023 by the Honourable Jonathan Wilkinson, Minister of Energy and Natural Resources.

Mandate

The Council was mandated to provide independent advice to government on the key steps needed to ensure that Canada's electricity sector is positioned to assume its central role in achieving Canada's emissions goals affordably, reliably and in ways that facilitate Indigenous participation. The Council was provided with one year to complete its work.

Membership

The Council is an independent body comprised of 19 Canadian electricity sector experts, representing a cross-section of current and former leaders of electric utilities, power system operators, power producers, utility regulators, Indigenous Nations and stakeholders from every region of the country. See the Council Members section (see page 5) for the full list of members.

Principles

At its inaugural meeting, the Council unanimously adopted a set of principles to guide its work. Notable among these are:

- **Respect for each other.** Council membership reflects a great diversity of experiences and perspectives. Members agreed to bring four qualities to the table – respect, humility, expertise and wisdom – to ensure its work best serves Canadians.
- **Respect for provincial and territorial jurisdiction.** Recognizing the Council was appointed by the federal government, the Council agreed that its work and recommendations must fully respect provincial and territorial jurisdiction over electricity systems.
- **Technology agnosticism:** The Council agreed to exclude debate over electricity technology pathways from its scope of work, for two reasons. First, the Council believes there are no inherently "good" solutions, only ones that are more or less appropriate for a given region, context and need. Second, the Council agreed that the most daunting challenges facing Canada's clean energy transition are primarily structural—stemming from existing policies, practices, and priorities—rather than technological.

Process

At its launch in May 2023, the Council established five working groups, which met every two to three weeks – a total of 79 meetings — throughout most of the year:

- **Governance:** Electricity system planning and oversight (12 meetings)
- **Projects:** Project approvals and Indigenous benefits (15 meetings)
- **Capital and Affordability:** Capital attraction and affordability (17 meetings)
- **Cooperation:** Regional planning and cooperation (21 meetings)
- **Innovation and Reliability** (14 meetings)

The working groups in turn shared their work with the full Council, which met in person over a total of nearly 100 hours across eight meetings held across the country.[8]

A Secretariat, housed at Natural Resources Canada (NRCan), and consisting of employees assigned to the Council's work, supported the Council in conducting research and analysis, facilitating stakeholder engagement, and providing administrative support. They reported to the Council's Chair.

Engagement

To ensure that the Council's recommendations incorporated the diverse insights and realities of the full range of Canada's electricity sector stakeholders, the Council engaged with more than 100 stakeholders, from every province and territory across Canada, to better understand the opportunities, barriers and needs associated with Canada's electricity systems. These included:

- 25 briefings from stakeholders – including utility leaders, power sector associations, regulators, labour leaders and others – to the full Council;
- 41 thematic briefings from stakeholders to Council working groups; and
- 72 written submissions from stakeholders in response to written questions corresponding to each of the Council's working group themes.

In addition, Council members met individually with stakeholders and Indigenous leaders across the country, including provincial and federal officials, utility executives and others. (A summary of What We Heard is presented in Appendix B.)

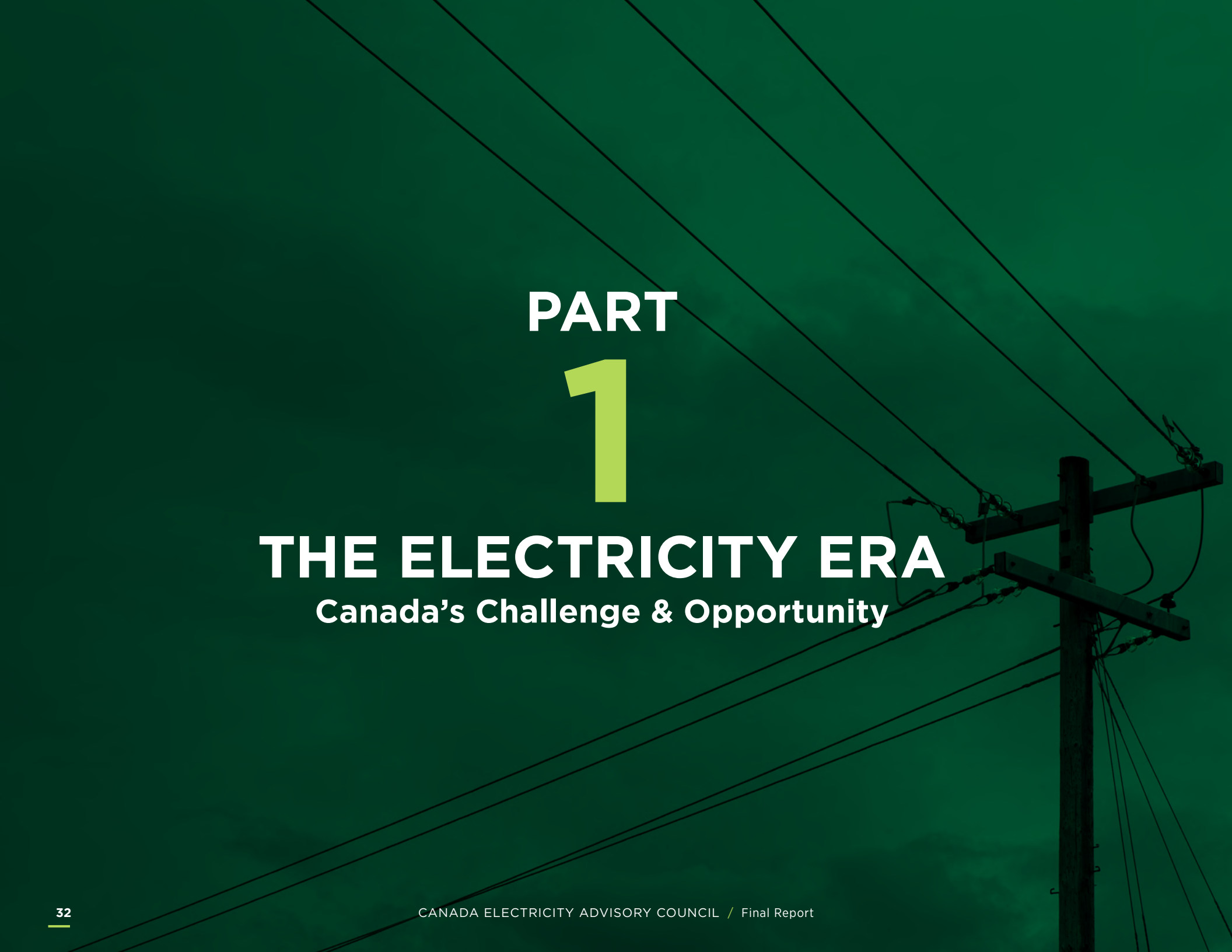
This Report

This report represents the Council's final findings and recommendations, which have been tabled with the Minister.

These findings and recommendations represent the consensus view of the full Council, defined in its Terms of Reference as prevailing "when all members can accept the proposed decision on a specific issue in the context of the full package of outcomes."[9] There were notably no dissents.

8 In chronological order: Toronto, May 11-12, 2023; Halifax, June 28-29, 2023; Montréal, August 30-31, 2023; Calgary, October 26-27, 2023; Ottawa, December 13-14, 2023; Vancouver, February 8-9, 2024; Toronto, March 11, 2024; and Winnipeg, April 9-10, 2024.

9 NRCan. 2023. Terms of Reference: Canada Electricity Advisory Council.



PART 1

THE ELECTRICITY ERA

Canada's Challenge & Opportunity

THE BIG PICTURE

GLOBAL VIEW

Energy in Transition

Through its commitment to largely decarbonizing its electricity grids by 2035 and achieving net-zero emissions by 2050[10], Canada has joined much of the world in pursuit of a significant economic transformation: the transition to clean energy.

At the core of this transition is a shift toward electrification – migrating many essential energy needs from fossil fuels to clean electric power.[11] This transition is now well underway globally, driven by declining clean technology costs, more robust policy support, and increasing demand from consumers and investors around the world.[12] From electric vehicles to electric-powered heat pumps to electricity replacing other energy sources feeding industrial processes and manufacturing facilities, we are likely witnessing the dawn of a new electric age.

This transition is, at its core, about producing more clean energy, using it more productively, and keeping it affordable. Electrification is becoming the preferred method for emissions reductions in much of the world for several reasons. Electricity can often be consumed far more efficiently than alternatives, it draws from resources that every region has in one form or another, and often offers the lowest overall cost and the greatest ease of implementation, especially when accompanied by major improvements in energy efficiency.

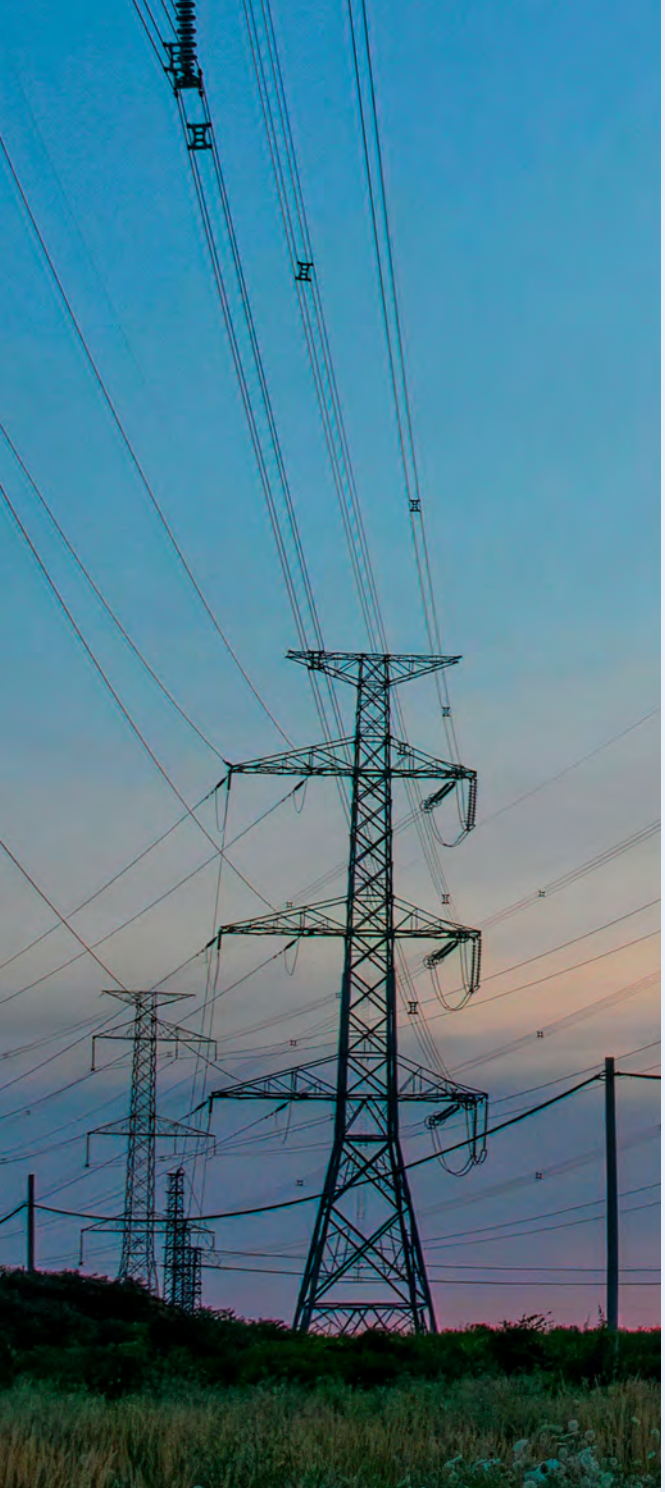
Electricity will not be the answer for every energy need. Traditional oil and gas, bioenergy, and hydrogen will remain vital fuels in hard-to-abate sectors for the foreseeable future. However, the accelerating trend in the energy transition clearly indicates that electricity is likely to dominate the world's energy systems within a few decades.[13]

"Reaching net-zero emissions hinges on a rapid expansion of the electricity sector, which will provide significant societal benefits."[14]

ELECTRICITY CANADA

10 ECCC. 2022. 2030 Emissions Reduction Plan.
11 International Energy Association (IEA). 2023. World Energy Outlook 2023.
12 IEA. 2023. Electricity Grids and Secure Energy Transitions.; IEA. 2024. Electricity – 2024.
13 IEA. 2023. World Energy Outlook 2023.

14 Unless otherwise indicated, all quotes from stakeholders in this document are from written submissions to the Council.



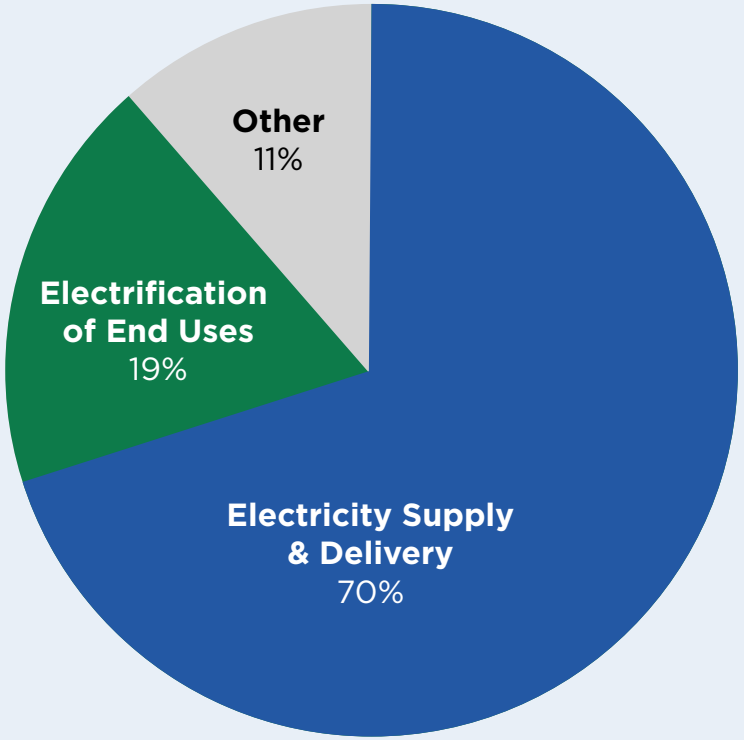


FIGURE 9: SHARE OF ANNUAL GLOBAL ENERGY TRANSITION INVESTMENT TO 2050.[15]

Electricity is pivotal in the transition to a net-zero economy. According to an Energy Transitions Commission (ETC) study, an annual average of $3.5 trillion – or 3 percent of GDP – will need to be invested globally until 2050 to complete the transition.

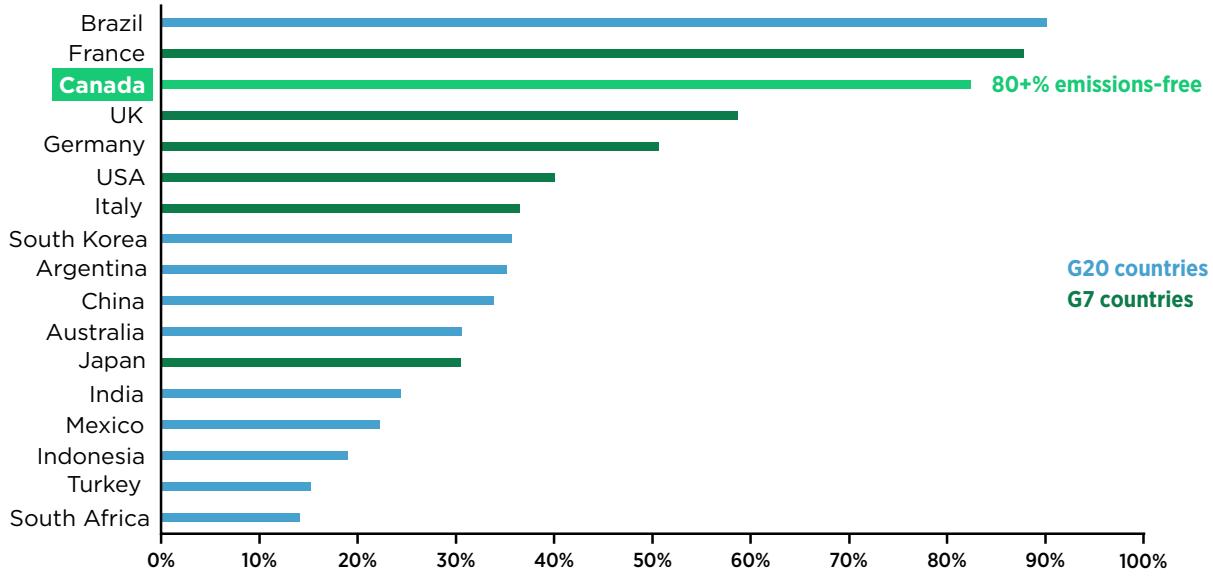
Notably, the ETC study found that 70 percent of the necessary investment will need to flow to the electricity sector for new power supplies, delivery infrastructure (transmission and distribution) and storage. Another 19 percent will go to the electrification of most (but not all) end uses, notably through heat pumps and electric vehicles. The remaining 11 percent will be needed to support carbon removal, clean hydrogen, and other industrial decarbonization initiatives.

15 Energy Transitions Commission. 2023. Financing the Transition: How to Make the Money Flow for a Net-Zero Economy

WHAT DOES THIS MEAN FOR CANADA?

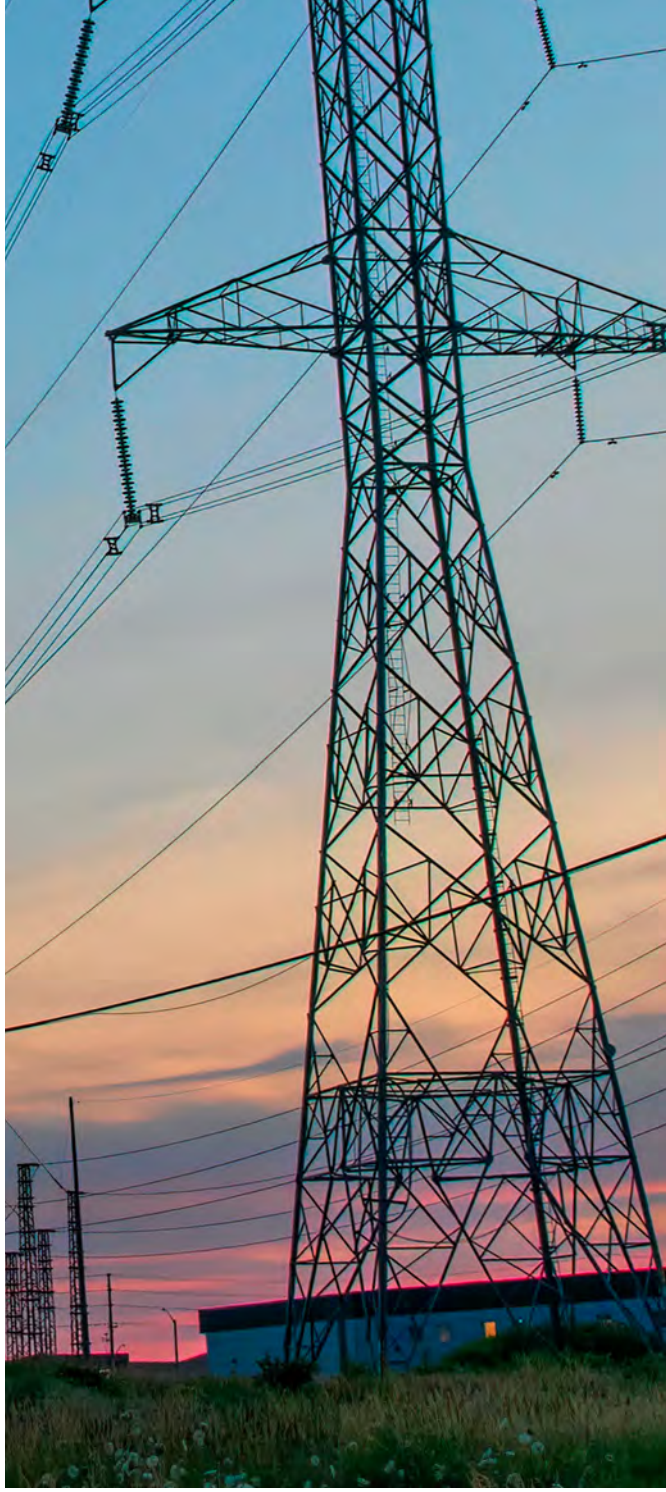
Canada's Head Start

Canada has sound reasons for optimism in this emerging electricity era. Few countries begin this phase of the transition in a stronger position. Canada has one of the world's cleanest electricity systems, with more than 80 percent of its power already emissions-free[16] (see Figure 10), and its vast land mass offers abundant clean energy resources waiting to be harnessed from coast to coast to coast. Its electricity sector has taken some important steps to date, working to phase out coal-fired power and making substantial investments in renewable energy and other technologies vital for the next phase of this shift.



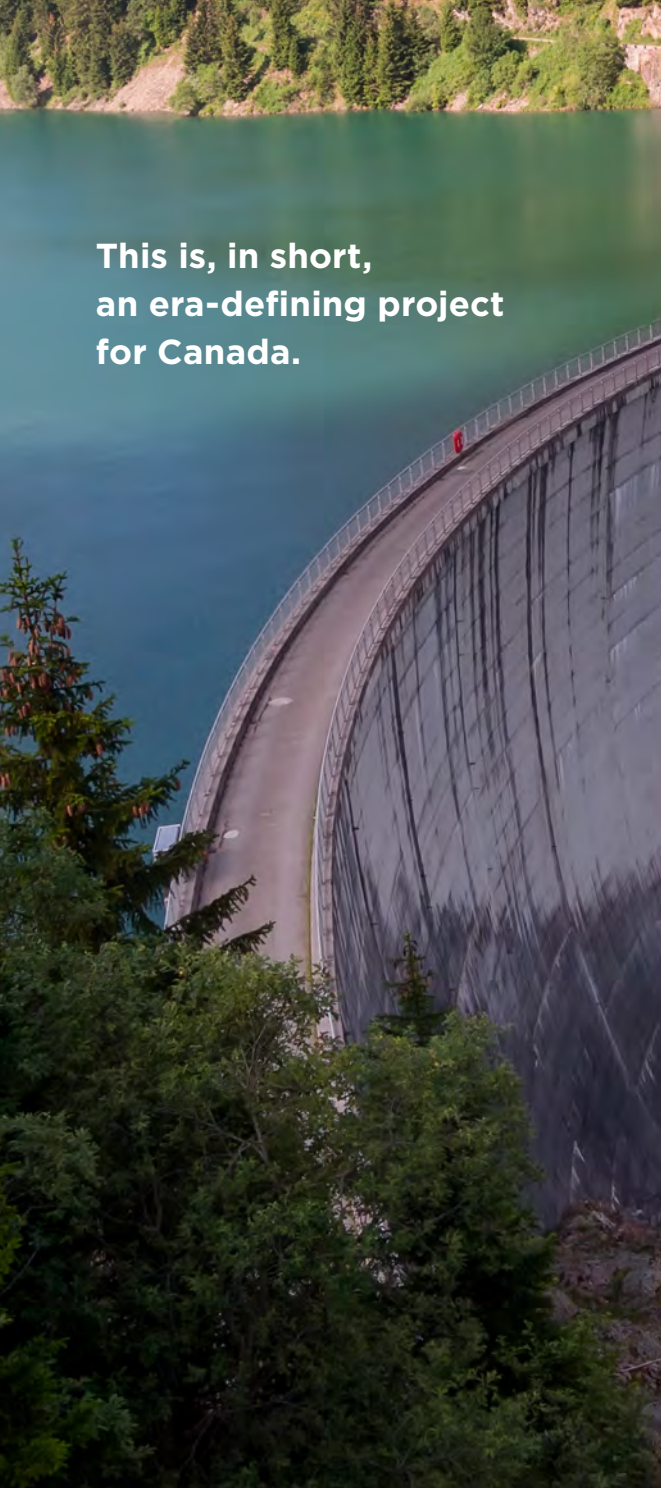
SHARE OF NON-EMITTING ELECTRICITY GENERATION

FIGURE 10: CANADA'S SHARE OF NON-EMITTING ELECTRICITY GENERATION COMPARED TO G7 AND G20 COUNTRIES[17]



16 NRCan. 2023. Powering Canada Forward: Building a Clean, Affordable, and Reliable Electricity System for Every Region of Canada

17 Includes biofuels, waste, nuclear, hydro, geothermal, wind, tide, and solar generation. Data for South Africa, China, India and Indonesia is from 2021. No data available for the European Union, Saudi Arabia, and Russia. Based on IEA country profiles. (IEA. 2024. Countries and Regions.)



As Canada accelerates toward net zero, there will be both formidable challenges and substantial opportunities. The transition will shape infrastructure investments, reconfigure employment markets and supply chains, and redefine Canada's standing for foreign investment attraction and the competitiveness of its exports. It will also change how Canadians heat their homes and buildings, propel vehicles, and power industrial activity. It can help redefine—and strengthen—Canada's relationship with the Indigenous Nations and communities that form an integral part of this country. And it will define the effectiveness of our collective response to climate change.

This is, in short, an era-defining project for Canada. The question is whether its primary impacts happen to us or for us—whether Canadians seize this opportunity as a nation-building project and tackle it in a serious, constructive and collaborative manner, or whether we wait until it's thrust upon us, increasing the risk of falling behind in a post-transition economy and leaving the next generation of Canadians at risk of being poorly regarded internationally, ill-equipped technologically, and underprepared economically.

The Council believes the choice is clear.

CHALLENGES FOR CANADA

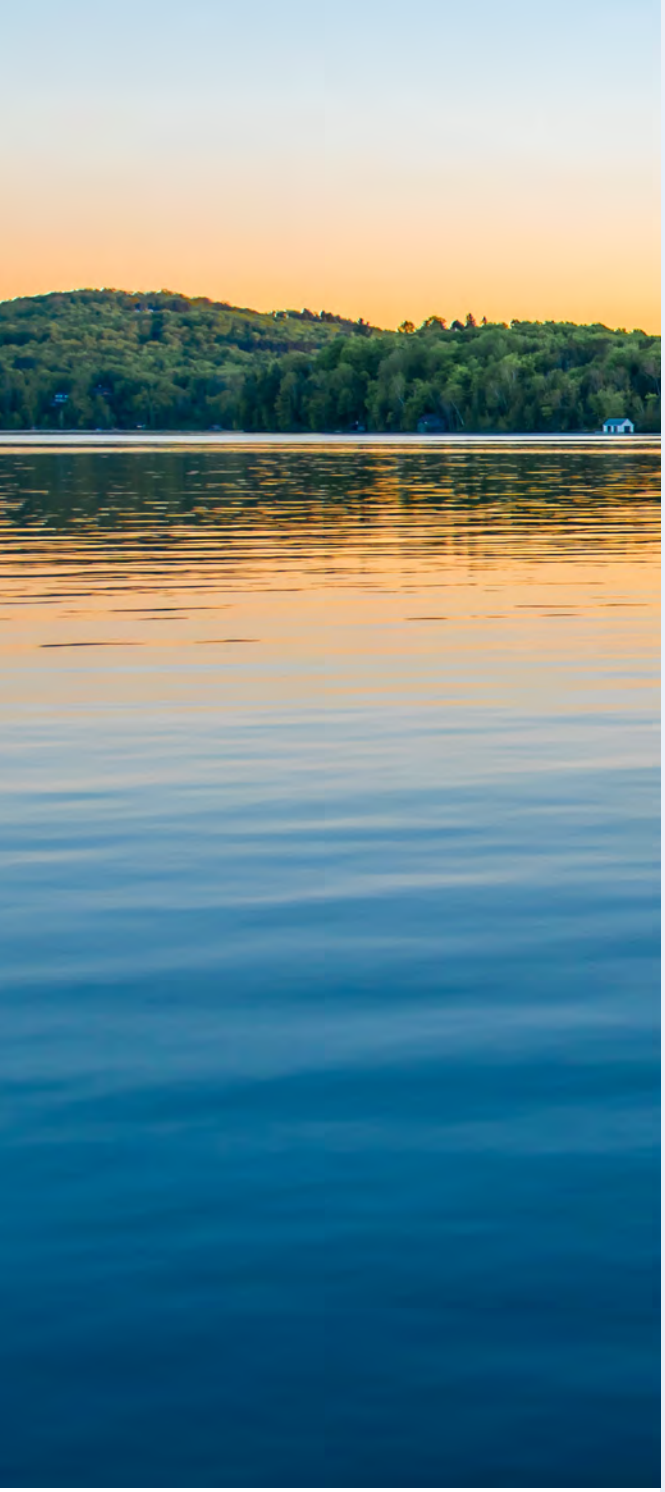
For Canada to reach its net-zero goal, multiple studies have concluded that in addition to largely eliminating the remaining emissions from current electricity production, the share of overall energy supplied by electricity will need to roughly triple, increasing from 17 percent to between 40 and 70 percent.[18] In a single generation, then, clean electricity will need to become the dominant source of energy in Canada.

This presents a dual challenge—largely decarbonizing the existing electricity system, while also significantly expanding the whole system to help other sectors of the economy achieve their necessary emissions reductions by 2050.

There is not enough time to address one challenge and then the other—Canada must tackle both in parallel.

And every region in the country must do so while maintaining sufficient flexibility regarding how their electricity systems decarbonize and grow to ensure that they remain safe, affordable, and reliable.

18 CER. 2023. Canada's Energy Future; Canadian Climate Institute. 2022. The Big Switch: Powering Canada's Net Zero Future.; Jaccard, M. and Griffin, B. 2021. Shifting Power: Zero-Emission Canadian Electricity System by 2035. David Suzuki Foundation; Trottier Energy Institute. 2024. Canadian Energy Outlook; Electric Power Research Institute. 2021. Canadian National Electrification Assessment.



Canada's Electricity Waves

While the dual challenge facing Canada – rapidly expanding electricity generation while simultaneously decarbonizing – is daunting, Canada's electricity sector has risen to the occasion in the past.

From 1950 to 2000, annual electricity generation in Canada increased more than tenfold, from less than 50 terawatt-hours (TWh) per year to more than 500 TWh. The electricity infrastructure built in this period supported a dramatically increasing population, economic growth, and the rapid spread of new electric-powered appliances and equipment.

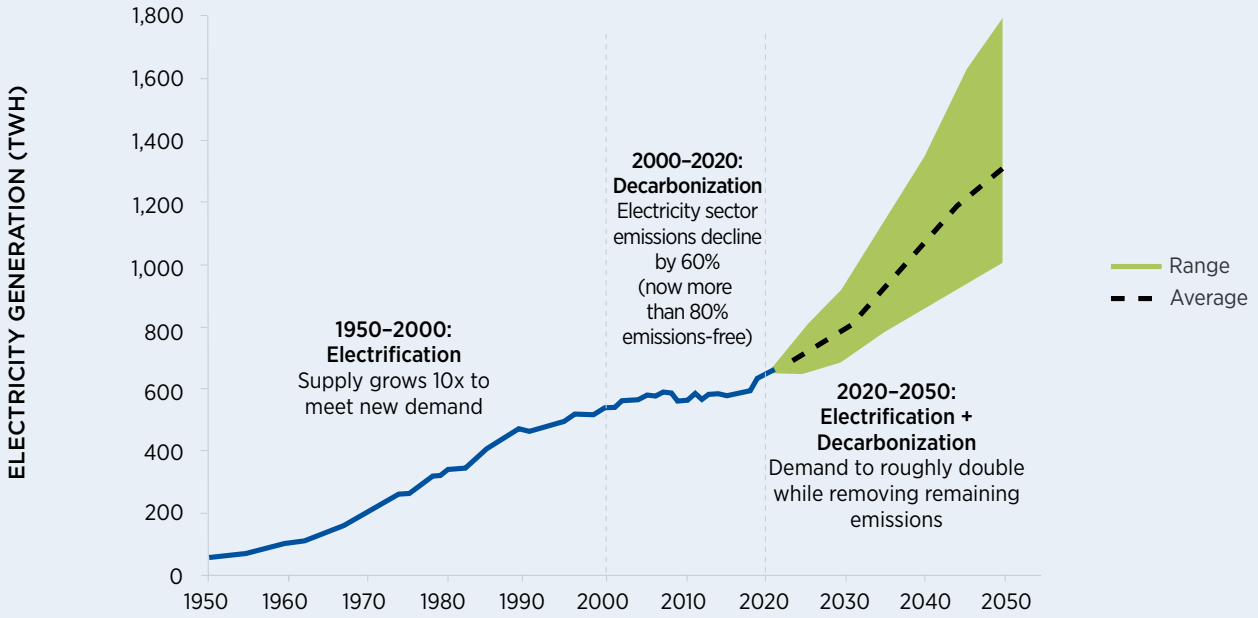


FIGURE 11: 100 YEARS OF ELECTRICITY GENERATION IN CANADA[19]

19 Historical data: Statistic Canada. 2024. Electric power, electric utilities and industry, annual supply and disposition; Statistics Canada. 2008. Archived — Electric power statistics, with data for years 1950 – 2007; Forecast: Transition Accelerator analysis, as presented in Box 7; Emissions intensity data: CER. 2024. Provincial & Territorial Energy Profiles and CER. 2016. Market Snapshot: Decreasing GHG intensity of electricity generation reflects changes within the power sector

More recently, from 2000 to 2020, electricity demand largely stabilized, in large part as a result of a deliberate push to improve the energy efficiency of key end uses.[20] During that time, several provinces also took strong action to reduce their electricity-related carbon emissions, resulting in a nationwide emissions decrease of 60 percent in barely two decades – more than any other sector of the Canadian economy.[21]

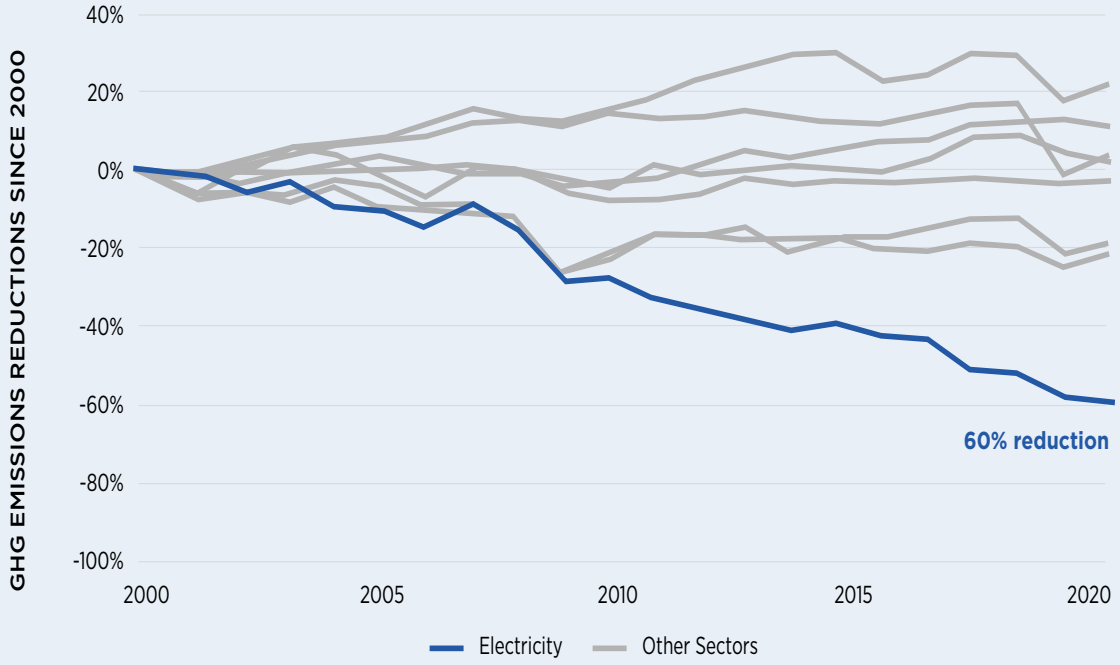


FIGURE 12: EMISSIONS REDUCTIONS BY SECTOR, 2000-2020[22]

20 Nationally, energy efficiency improved 12.3 percent from 2000 to 2019. (NRCan. Energy Efficiency Trends in Canada)
21 Environment and Climate Change Canada. 2024. Canada's Official Greenhouse Gas Inventory
22 Environment and Climate Change Canada. 2024. Canada's Official Greenhouse Gas Inventory

Unequal Starting Points

Canada's advantageous starting point masks significant regional differences. There are effectively three separate spots from which Canada begins this phase of the electricity transition.[23]

- **Largely decarbonized:** Eighty percent of Canadians live in provinces or territories where emissions-free renewable or nuclear power already generate nearly all their electricity (90 percent or more).[24] For this group — Quebec, British Columbia, Manitoba, Ontario, and Newfoundland and Labrador — the first challenge, decarbonizing the electricity system, has been largely achieved, and the challenge lies mostly in growing supply.

- **Mostly decarbonized:** For another group — New Brunswick, Prince Edward Island[25], the Northwest Territories and Yukon — electricity is produced from a wider mix of sources, with non-emitting power predominating but significant amounts of fossil-based power still in use. In these jurisdictions, power systems still face important hurdles to decarbonize, but they are already well on their way.

- **A greater challenge:** The third group — Alberta, Saskatchewan, Nova Scotia, and Nunavut — still relies on fossil fuels for the majority of its electricity production. Nearly one in five Canadians live in these jurisdictions,[26] where the use of renewable power is growing but the challenge to decarbonizing existing grids remains a far greater undertaking.

23 The Council acknowledges that the territories have a distinct governance structure compared to provinces, and face unique concerns related to remoteness, population density, and energy affordability.
24 Based on projected values for 2022 from the CER's Canada's Energy Future 2023 report.
25 While wind power provides most of PEI's in-province electrical generation, the province relies significantly on imports from New Brunswick for its electricity needs.
26 Statistics Canada. 2024. Population estimates, quarterly.

While reflective of some policy choices, these starting points are largely the result of regional resource availability, not ideology. Considering the varying starting points of each region of Canada is critical for policy-makers to bear in mind as Canada considers its path forward to net zero.

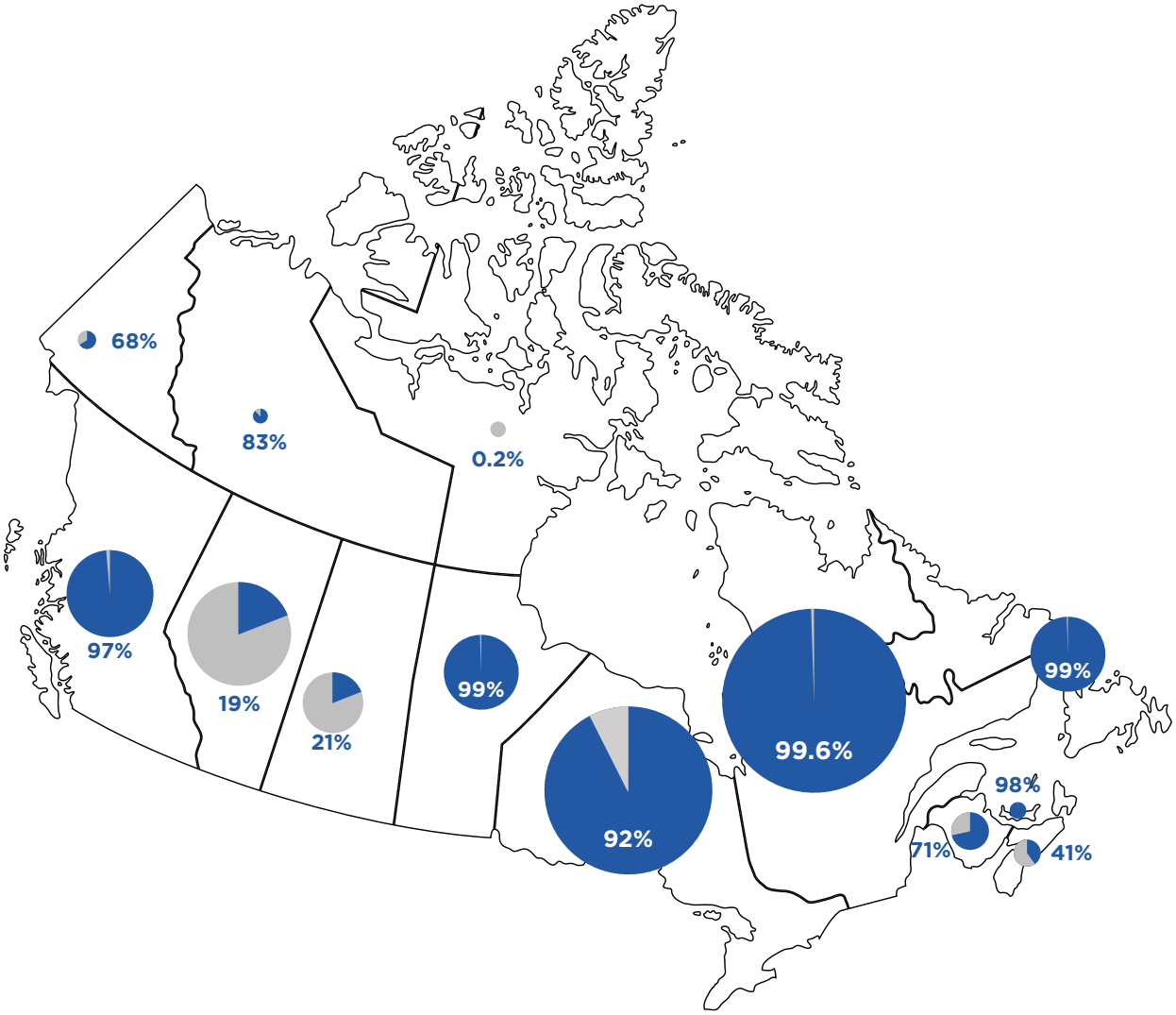


FIGURE 13. SHARE OF NON-EMITTING ELECTRICITY GENERATION BY PROVINCE AND TERRITORY, 2022[27]

27 Pie charts are sized to approximates total size of each province and territory's electricity system, based on generation. The figure is based on projected values for 2022 from the CER's Canada's Energy Future 2023 report, and in some cases may not align with historical values due to projection model assumptions.

"Lack of consensus on the paths to net-zero between governments and different orders of government creates paralysis amongst investors, especially in reaction to policies that require longevity to properly function, like the carbon pricing system and the Clean Electricity Regulations."

ENERGY STORAGE CANADA

The Need for Policy Clarity

Canada enjoys a meaningful head start in the race to clean power, but its electricity systems are not entering this new phase of expansion from ideal starting points. Federal, provincial and territorial policies are not yet fully aligned with the goals of decarbonization, and many of these will need to be revised for Canada to reach those goals efficiently, affordably, and reliably.

Striking the right balance will not be easy. Policies will need to point in the right direction but also allow for enough flexibility to account for different regional starting points. Many electricity sector players want to make the needed changes but are often impeded by outmoded processes. For example:

- **Utility regulation:** Many utilities and system operators have made significant strides to reduce emissions and are being tasked with further decarbonizing their systems, while also greatly expanding capacity. In some cases, however, they and their regulators do not have clear mandates to that effect. As a result, some utilities are reluctant to propose needed investments, while some regulators are unsure if they have the authority to approve them.
- **Permitting:** Even as governments and power-sector players race forward to build new clean electricity infrastructure, there remain lengthy and duplicative processes between jurisdictions. In addition, project permitting and approval authorities are often focused primarily on local concerns. As these agencies work as directed to protect the local environment, current processes and regulatory overlap can delay vital clean energy projects aimed at broader environmental imperatives and inadvertently slow the transition.
- **Others:** Similar issues of misalignment threaten success on other fronts. Among these are: fa lack of incentives for inter-jurisdictional cooperation on transmission interties; insufficiently competitive financial supports to attract capital; and market rules and price signals that slow customer adoption of new energy-efficient and peak-reducing equipment.

The Council's recommendations address these and other impediments to progress.

De-politicizing Electricity: A Call for more Collaboration and Consistency

Beyond policy alignment, Canada's next phase of electrification will require much stronger intergovernmental collaboration.

Canada's electricity systems are governed by ten provinces and three territories, as well as the federal government. Those fourteen distinct governments, with varying and frequently changing political perspectives, cannot be expected to share the same views on electricity (or any other issue) across the country or across time. This competition for ideas is a positive hallmark of our democracy.

At the same time, if Canada is to successfully navigate the current transition, greater policy stability and predictability will be essential, for two key reasons:

- *First, for investor confidence.* Policy swings create uncertainty, which can weaken investor confidence in the value of new projects. As a result, the investment capital that is so vital for a successful transition is at risk of flowing elsewhere or of becoming more expensive for Canadians.
- *Second, for intergovernmental cooperation.* Electricity trading – getting the most value out of each jurisdiction's complementary resources and usage patterns – can be an effective tool to minimize costs for Canadians. But enhancing trade requires more cooperation, notably in planning and building new transmission infrastructure. An overly politicized environment could put the country's ability to build large, multi-year, cross-jurisdictional projects at serious risk.

While the Council supports healthy debate, all parties – at all levels of government – should consider the real costs of disruption, as well as the considerable value of stability in electricity policy. A constructive, collaborative approach between national and sub-national governments will be crucial to build on the substantial work already being done across the country – by utilities as well as governments – and help ensure the orderly, affordable, reliable transition that Canadians expect.

Capital Investments

The substantial capital investments required for this transition also pose significant challenges. Major new power generation and transmission projects, which can take a decade or longer to build, will need to be greenlighted despite substantial upfront costs. To best serve Canadians, electricity policies should strive to remove the procedural delays and duplicative permitting processes that can amplify uncertainties and increase costs for developers and their investors. At the same time, these policies must ensure the respect of constitutionally protected Indigenous rights.

Developers of new electricity projects in Canada are fighting in a hyper-competitive global marketplace for investment capital, supply chains, and skilled labour. Canada's pace-setting peers – the United States, Europe, and China – are already moving forward with increasing clarity and strong support, drawing investors away from Canadian projects.

Clear, deliberate policy, calibrated for the needs of net-zero electricity and implemented in a timely fashion, is essential to help attract the large amounts of private sector capital that will be needed to overcome Canada's dual challenge of decarbonization and electricity growth.

Accelerating Canada's electricity shift will undoubtedly involve substantial near-term investments, posing risks for affordability at a time when Canadians are facing increasing cost of living. Accordingly, many of the Council's recommendations are focused on reducing the overall investment requirements of the energy transition to keep costs affordable for all Canadians.

Affordability is equally important for Canadian industry, where electricity accounts for up to one-third of total operating costs; for businesses, including small and medium-sized enterprises sensitive to rate increases; and for residential customers, particularly lower-income Canadians and other groups most vulnerable to rising costs.

A Responsibility, a Challenge, and an Opportunity

Canadian policy-makers have a responsibility to chart a path for an orderly electricity transition. Canadians deserve access to affordable, reliable energy, while their safety and the future prosperity of the country are dependent on an abundance of clean electricity.

Accepting this responsibility means taking on the challenge of implementing the major changes necessary to place the country on sustainable foundations for the rest of the twenty-first century. In overcoming the challenge, Canada can seize the enormous opportunity to build a cleaner economy that attracts new investment and jobs, forges a collaborative relationship with Indigenous Nations and communities, and positions Canada to succeed in the global economy.

This Council has found in its analysis that there can be a route to net zero that respects regional disparities, safeguards reliability, maintains affordability and cost-competitiveness, respects Indigenous rights, and welcomes Indigenous collaboration. Although planning for the future inevitably involves significant uncertainties, the Council believes its recommendations provide the most pragmatic way for the federal government to help move Canada in the right direction, while providing flexibility to deal with changing circumstances.

The risks and barriers along the way are undoubtedly significant, but so too are the rewards.

Other essential policy areas for a successful electricity transition

The electricity transition is a vast undertaking. In deference to its Terms of Reference and limited time, the Council chose to focus its attention on the issues central to its mandate. In its analysis, however, there emerged three other major issues that are outside the Council's scope but deserving of the federal government's serious attention:

Labour and supply chains: Even if governments reduce permitting barriers and enable capital attraction, electricity projects cannot be built without certain kinds of skilled labour, the right materials, and reliable supply chains. The right skills are also vital for the operation and maintenance of electricity projects and systems. Over 80 percent of electricity employers foresee difficulties in attracting workers in the next six years.[28] This illustrates the need for a comprehensive human-resource strategy that aligns with Canada's commitment to supporting workers in all sectors as they adapt to the new energy economy.[29] Additional efforts at national scale are needed to address supply chain issues.

Social license: Ensuring public buy-in is critical to enable the construction of new clean power projects. Carefully calibrated policies can support effective community involvement in system planning, siting, reviews, and ownership – valuable tools for gaining acceptance and thus reducing delays and uncertainty – while also respecting the cost-effective development timelines for new clean electricity projects. New approaches being adopted in the European Union[30], the U.S.[31] (nationally and at the state level in New York, California, and Illinois), and Australia[32] demonstrate options to enhance public support.

Resilience: As the climate changes, Canada will continue to see increased impacts on critical electricity infrastructure, including generation (e.g. drought impacts on hydropower), grids (e.g. ice storms and wildfires), and demand (e.g. heat waves that spike air-conditioning loads). The Council's recommendations regarding load flexibility, improved building standards and inter-regional transmission address these challenges in part, but further federal attention on infrastructure resiliency is needed.

28 Electricity Human Resources Council Canada (EHRC). 2023. Electricity in Demand: Labour Market Insights 2023-28.
29 NRCan. 2023. Sustainable Jobs Plan (Interim Plan for 2023-2025); Office of the Auditor General of Canada. 2022. Report of the Commissioner of the Environment and Sustainable Development to the Parliament of Canada: Just Transition to a Low-Carbon Economy.
30 Notably, community-focused clauses under the Renewable Energy and Electricity Market directive. (European Commission. 2024. Energy communities.)
31 E.g., requirements for Project Labour Agreements and Community Benefit Agreements for certain projects. See: Arnold, J. and Beck. M. 2023. Permitting reform for clean energy projects in New York and California. Canadian Climate Institute; Illinois General Assembly. 2021. Energy Transition Act; The White House. May 22, 2022. FACT SHEET: Biden-Harris Administration Releases Permitting Action Plan to Accelerate and Deliver Infrastructure Projects On Time, On Task, and On Budget.
32 Government of Australia. 2023. Improving community engagement and support for renewable energy.

LOOKING FORWARD:

The Cornerstones of Canada's Electricity Transition

The Council has dedicated the year of its mandate to examining where Canada's electricity systems stand today and how they must transform to meet its net-zero goals— affordably, reliably, and to the benefit of Indigenous Nations and communities. Its broad consensus conclusion is that the goal, while challenging, is very much possible.

To enable the success of the energy transition in every region of Canada, the Council has determined that the federal government's approach must be founded on the following four cornerstones:

1. **Speed:** To meet its decarbonization objectives, Canada must rapidly accelerate the build-out of clean electricity infrastructure projects.
2. **Affordability:** Affordability, fairness, and cost-competitiveness must be protected amidst soaring investment demands and a diversity of provincial and territorial energy landscapes.
3. **Reliability:** Safeguarding the reliability of Canada's electricity systems during this period of rapid change is essential.
4. **Indigenous Participation:** The inclusion of Indigenous Nations and communities in the energy transition must be prioritized to foster economic reconciliation and deliver the full benefits of the transition.

These four cornerstones — speed, reliability, affordability, and Indigenous participation — form the necessary foundation upon which a successful electricity system must be built. The Council's findings on these four cornerstones are explored below.

SPEED

Electricity is becoming a bottleneck

Electrification's dual challenge of decarbonization and growth requires governments, utilities, and developers to act faster than ever before. Current forecasts show that more than 10 gigawatts (GW) of new, emissions-free electricity will need to be added to Canadian power systems every single year from now until 2050.[33]

This means that electricity generation capacity must grow at least three times as fast as it has in recent decades.[34]

Yet projects are increasingly ensnared in procedural delays. Canada ranks second worst among the 38 Organisation for Economic Co-operation and Development (OECD) countries for the pace of permitting.[35] If not tackled head-on, the resulting lack of new clean power risks becoming a significant **bottleneck for Canada's economy**, the reliability of its electricity grids, and the achievement of its climate goals.

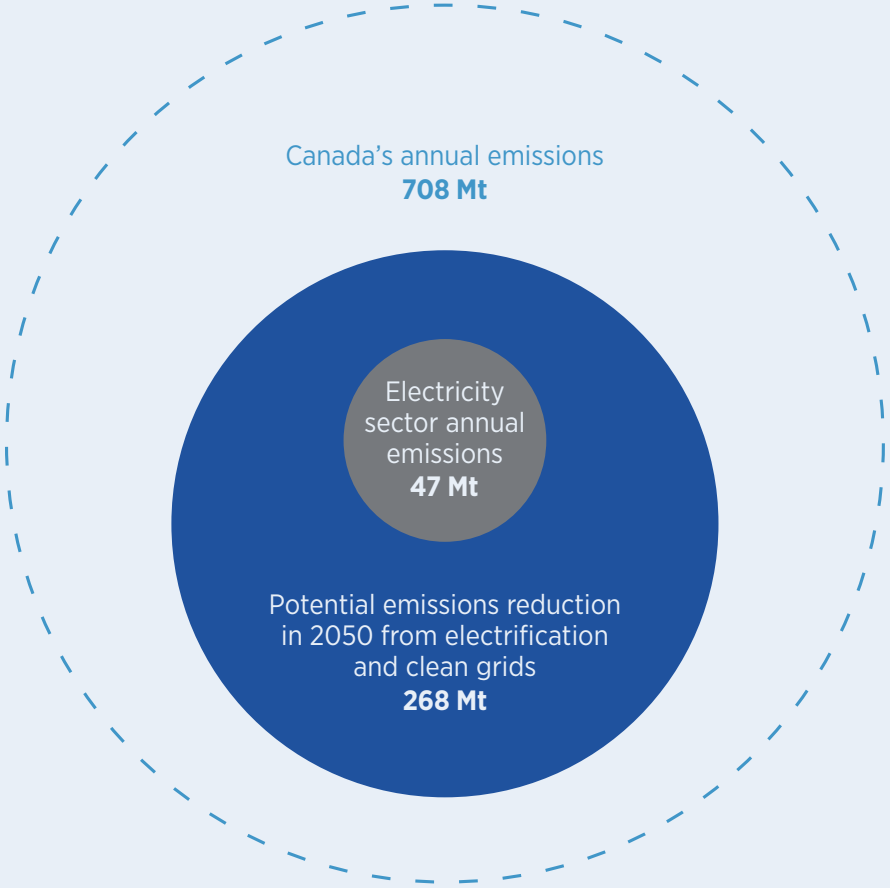
Lead times in large-scale electricity production and transmission are long, and the scale and cost of building the required infrastructure is measured in years and billions of dollars. There is also a "time cost" to emissions reductions. The sooner greenhouse gases are cut, the more benefit for reducing the impacts of climate change.

33 Northey, R. 2023. Expediting Clean Energy Facilities in Canada: A framework for new fast-track permitting. Canadian Climate Institute.
34 CER. 2023. Canada's Energy Future 2023.
35 Golshan, A. 2024. A Hurry-up Offense for Energy Transition and Clean Growth Projects. Public Policy Forum.

Electricity is the key to a net-zero future.

According to the Canadian Climate Institute, clean electricity – both to decarbonize existing supplies and to electrify many end uses across buildings, industry and transportation – is central to every possible pathway to Canada's net-zero target, contributing up to 37 percent of required reductions.[36] [37]

FIGURE 2: SHARE OF NON-EMITTING ELECTRICITY GENERATION BY PROVINCE AND TERRITORY[38]



36 Canadian Climate Institute. 2023, March 29. Electrification is the Linchpin of Canada's Climate Policy Progress.

37 The Council notes that electricity's role in the rest of the world is slated to be even bigger. This is owing to a number of factors, including (a) Canada's head start in decarbonizing its electricity sector (already 80 percent emissions-free – see Figure 10), and (b) the role of the oil and gas sector in Canada's total emissions, which will predominantly rely on non-electric pathways to decarbonization. (NRCan. 2023. Roadmap for the Decarbonization of Canada's Oil and Gas Sector)

38 Current emissions data is from 2022, the most recent year for which data is available (Environment and Climate Change Canada. 2024. Canada's Official Greenhouse Gas Inventory); Electricity's contribution to 2050 goal from Canadian Climate Institute. 2023, March 29. Electrification is the Linchpin of Canada's Climate Policy Progress.

"The same regulatory systems that were designed to keep bad things from happening are now preventing high-quality projects from being built in the first place."

BUSINESS COUNCIL OF ALBERTA, JUNE 2023 REPORT[39]

"To achieve Canada's net-zero ambitions, it is critical to prioritize electricity projects with strategic importance by expediting their permitting processes."

THE ATMOSPHERIC FUND

Focus on the bigger picture

Current regulatory frameworks, designed to safeguard against environmental harm, are paradoxically stalling the clean energy projects that are necessary to decarbonize the economy and mitigate the worst impacts of climate change.

Addressing climate change demands **pragmatic flexibility**. The Council has determined that the urgency of climate change and the associated global economic transition requires a recalibration of Canada's priorities that accounts for the critical role of clean electricity. This is addressed in its recommendations 9 and 10 (in the section "ENABLE the Build" on page 92).

To do this properly, it is critical to prioritize early engagement with Indigenous Nations and communities to ensure that their constitutionally recognized rights are protected. Proper engagement and consultation are opportunities to support reconciliation while helping to reduce unnecessary delays.

39 Business Council of Alberta. 2023. Future Unbuilt: Transforming Canada's Regulatory Systems to Achieve Environmental, Economic, and Indigenous Partnership Goals. Task Force on Major Project Development and Regulatory Excellence.

Build fast for reliability

The Council has determined that rapidly accelerating the pace of clean electricity growth is essential to enable widespread decarbonization of Canada's electricity systems while maintaining reliability and keeping costs down.

Failure to accelerate clean electricity project approvals could intensify the mounting risk of overwhelming Canada's current infrastructure, which would in turn hinder reliability and slow the pace of decarbonization.

The race to attract (and retain) industry

Building out clean energy infrastructure more efficiently is critical for securing Canada's continued economic prosperity.

Businesses and industries around the world are in pursuit of reliable, affordable clean electricity to power their operations, driven by a marketplace that is increasingly placing a premium on low-carbon goods and services. From green steel production and electric vehicle manufacturing in Ontario to battery production and supply chain in Québec to liquefied natural gas development in British Columbia and Alberta to potash production in Saskatchewan to hydrogen development in Atlantic Canada, **access to low-carbon electricity is becoming a decisive factor in investment decisions**.

At the same time, supplying sufficient clean electricity is critical to support the ongoing operations of existing Canadian businesses and industries, from small and medium enterprises to large emissions-intensive and trade-exposed firms.

"The problem is that we have [requests for] about 10,000 MW from interesting projects, and in the short term, we simply do not have that capacity."

PIERRE FITZGIBBON, QUÉBEC MINISTER OF THE ECONOMY, INNOVATION AND ENERGY[40]

"When we built Keeyask [hydroelectric project], we didn't think we'd need that new power until 2045. We may need it by 2029 or 2030."

JAY GREWAL, FORMER CEO, MANITOBA HYDRO[41]

40 Desrosiers, É. March 16, 2024. Il y aura peu d'élus pour les prochaines allocations de puissance électrique. Le Devoir.

41 Cash, M. January 30, 2024. Looming need for new energy sources: Hydro CEO. Winnipeg Free Press.

Investing in Clean Electricity in Québec

As global companies look to decarbonize their supply chains, many are hunting for low-cost, carbon-free electricity to power their operations.

Québec is one region that has already seen new opportunities emerge from this new market advantage. In the past three years, large industrial operations have been flooding the province with requests for clean power to expand or build new plants. In total, these requests exceed 30,000 megawatts (MW) of new power, roughly three quarters of the utility's entire existing capacity.[42]

The sudden spike in demand, combined with the province's goal to decarbonize its economy by 2050, has spurred Hydro-Québec to commit to an unprecedented investment plan. In its 2035 Action Plan[43], the provincial utility committed to investing approximately $170 billion over 12 years to strengthen its existing grid and expand at an unprecedented pace. The planned expansion includes:

- more than 10 GW of new wind capacity;
- 4 GW of additional hydro capacity;
- 3.5 GW in savings through efficiency and demand management;
- up to 1.5 GW of other renewables and storage; and
- more than 5,000 kms of new transmission and distribution infrastructure.

Hydro-Québec's 2035 plan is a down payment on its long-term goal of adding 150-200 TWh per year by 2050, nearly doubling its current output, to both enable the province's decarbonization and keep pace with growing demand for affordable, zero-emission power.

42 Radio-Canada. October 9, 2023. Adoption de la loi 2 : Québec a reçu plus de 150 demandes pour 30 000 MW
43 Hydro-Québec. 2023. Action Plan 2035 – Towards a Decarbonized and Prosperous Québec.

Permitting reform is needed to ease the bottleneck

Canada can no longer afford to continue at its current pace. **The Council believes that governments have significant opportunities to reduce lead times for clean power project development in this country.** Its recommendations in the section “ENABLE the Build” address ways to seize those opportunities (see page 92).

The Council has determined that a large portion of permitting bottlenecks exist within provincial processes. That said, the Council has focused its efforts on permitting reform, because the federal government also contributes to existing bottlenecks and must show leadership in removing its own unnecessary or duplicative processes. It can also pilot changes for the provinces and territories to consider where similar obstacles remain. The Council recognizes that a number of announcements made in the 2024 federal budget are aimed at accelerating project approvals, which is an important step.

"It is time to shift our thinking from electricity costs to total energy costs. Customers, large and small, need to understand total energy costs to make appropriate choices."

HYDRO ONE

AFFORDABILITY

Energy affordability plays a crucial role in Canada: for consumers, particularly given recent economy-wide inflation, and for business and industry, where energy can be an important factor for competitiveness.

How Do We Measure Affordability?

Meeting Canada's net-zero goals while maintaining the reliability of its electricity systems will require significant growth in capital investments. These additional investments, to the extent they are recovered through the rate base, will put upward pressure on electricity rates.

While rates overall are expected to increase, the Council understands that this represents only one part of the equation. Growth in electricity consumption will be offset by reductions in the purchase of other forms of energy, most notably natural gas and petroleum products. The resulting shift means that Canadians can expect to spend more on electricity and less on fossil fuels.

The sum of those changes — combined with any added costs for electricity-using equipment — indicates the net impact on the "energy wallets" of Canadians. This energy wallet represents the total amount Canadians will spend to receive all the services that energy provides in their daily lives.

To understand the impact of the transition on affordability for Canadians — the changes to their energy wallets — the Council collaborated with the Transition Accelerator, an energy think tank, to conduct a nuanced and data-driven analysis. The Council provided oversight and guidance for this analysis. It is summarized in Box 7 below.

AFFORDABILITY: MODELLING THE IMPACT ON CANADIAN HOUSEHOLDS

As part of the Council's examination of affordability in Canada's energy transition, the Transition Accelerator produced an independent analysis of the impact of electrification on households across the country.

The analysis, overseen by the Council (primarily through its Capital and Affordability working group), leveraged well-regarded, Canada-specific national and provincial studies that have modelled net-zero-aligned energy pathways, including projected energy demand and supply options and their associated capital and operating expenditures. To understand future electricity rate implications and the net energy-related costs to consumers, the analysis built bottom-up estimates of revenue requirements for each province's electricity system through 2050, and then developed a range of scenarios for retail electricity rates, consumption of electricity and other fuels, and equipment-related consumer costs.

Key Findings

The modelling sought to examine three main cost implications of electrification: (1) capital requirements; (2) net impact on the average household's total energy costs; and (3) the distribution of those impacts for different income groups and regions.

1. Capital investments double (to $1.4 trillion by 2050)

The modelling results showed that under the most likely scenario, capital investments of approximately $1.4 trillion will be needed by 2050 to enable the necessary growth of the electricity system. At an average of $55 billion per year, this is roughly double the current rate of capital expenditure.

Beyond this medium-rate scenario, the analysis found a range of potential capital investment requirements stretching from $1.1 trillion to as high as $2 trillion. This highlights the extent to which Canadian governments can take deliberate actions to push costs down, a particular focus of the Council's recommendations.

In all scenarios, roughly half of this capital investment will be needed for additional clean power generation (both to replace or upgrade existing infrastructure and to build new capacity to meet demand growth), while the other half would be invested in the transmission and distribution infrastructure to deliver power to consumers.

2. For most households, energy bills decline by 2050

The net impact on households is a function of four factors:

1. an increase in electricity rates, resulting from additional capital investments;
2. a decline in fossil-fuel spending, as it is replaced to a significant degree by clean electricity;
3. a decline in overall energy consumption, because for most needs (heating and vehicles), electricity can be two to four times more efficient than the energy sources it will replace; and
4. an increase in equipment costs, namely electric heating systems and vehicles.

The combination of these factors was found to lead to a slight decline in net energy-related costs (including equipment) for the median Canadian household.

Under the medium-rate scenario, 70 percent of Canadian households are expected to see net savings in 2050 (Figure 15) of about $1,500 per year on average. Specifically, 6.3 million households would see an increase in their energy wallet spending (an $8 billion increase overall). Meanwhile, 15 million homes would share a net savings of $23 billion. In aggregate, Canadian households stand to save $15 billion annually as a result of the switch to electricity.

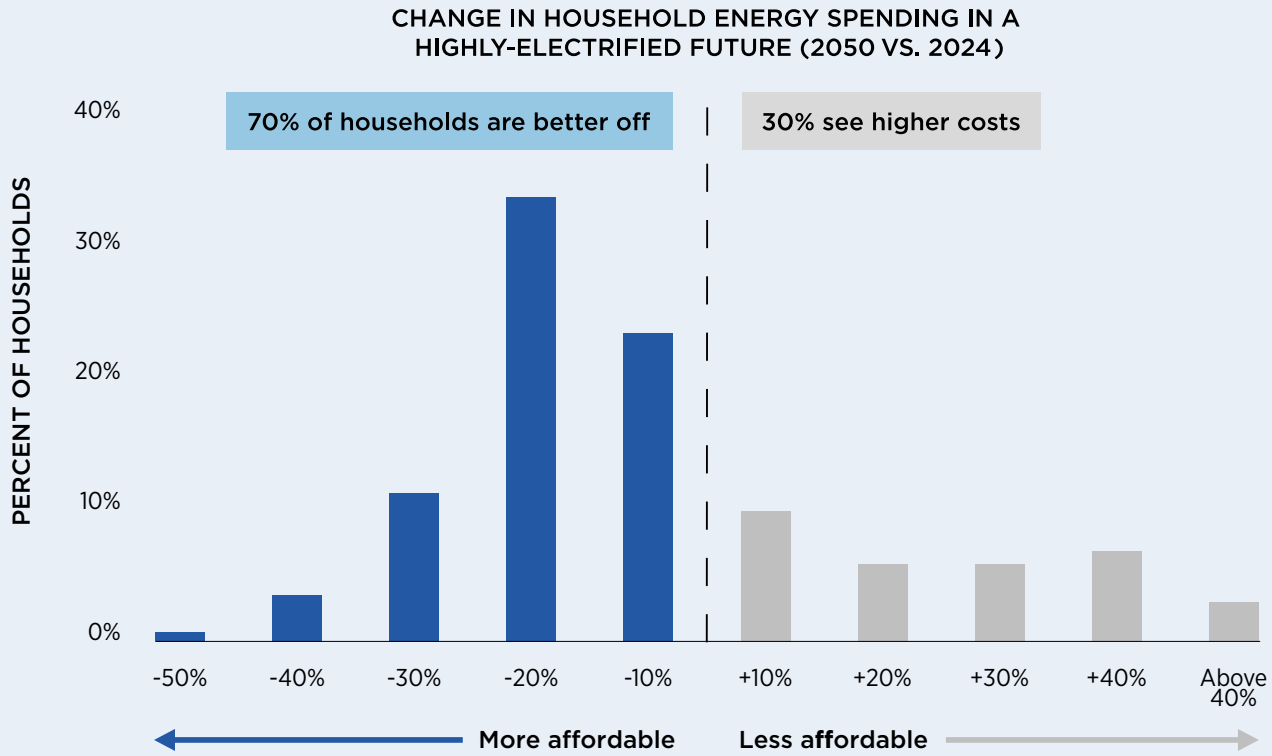


FIGURE 15. CHANGE IN ENERGY WALLET, 2024 TO 2050. THE MODELLING INDICATED THAT 7 IN 10 CANADIAN HOUSEHOLDS WOULD SEE NET SAVINGS, WHILE 3 IN 10 WOULD SEE NET COST INCREASES. ON THE WHOLE, CANADIANS COULD EXPECT TO SAVE $15 BILLION IN TOTAL ENERGY-RELATED COSTS, DESPITE A DOUBLING OF THE RATE OF ELECTRICITY-SECTOR INVESTMENT.

3. Distribution: While most Canadians save, some face higher average costs

While most Canadian households are likely to see lower total energy-related bills despite increased electricity-sector investments, averages can mask great variation among consumers.

Low-income households benefit somewhat less

While 70 percent of all Canadian households are expected to see net savings, that number drops to 58 percent for lower-income households.[44] This is primarily because a higher proportion of lower-income households do not own personal vehicles and therefore will not benefit from the savings associated with electrified transportation. The modelling did not disaggregate impacts on Indigenous communities, but statistically these communities tend to face higher rates of energy poverty.[45]

Two provinces experience more pain than gain

Households currently heated by natural gas in provinces with higher retail electricity rate projections (most notably Alberta and Saskatchewan) are far more likely to experience higher overall energy costs, partly since these jurisdictions already have high electricity rates. This is also a function of the assumption in the modelling that all heating would convert to electricity, an assumption the Council does not believe to be universally optimal. That said, their rate increases over time would be smaller relative to those in other provinces and their total energy expenditures would still be lower than those paid in the Maritimes today.

The Council's Take

The Council found this analysis useful overall. It provided valuable insight on possible transition pathways to Canada's net-zero future, their implications for energy system investment, and related cost impacts. The findings are broadly consistent with other credible studies and provide an important basis from which to consider policy interventions. Modelling of this sort, however, should be understood as a snapshot in time of a very complex system, one that points clearly to the end-state (2050), but does not speak to interim impacts, which may evolve in a non-linear fashion.

The Council acknowledges that the modelling work was limited in some respects (due to pathway study assumptions, data availability, and limited time to conduct additional analysis). For example, while the results are disaggregated by province, they do not consider impacts on Canada's North. Similarly, while results are focused on households (and disaggregated by income levels), they do not address business and industry. Finally, for simplicity, the energy wallet modelling assumed full electrification of heating and transportation, when in some circumstances other solutions may be more optimal.[46]

Caveats aside, the Council finds there is sufficient evidence to suggest that most Canadians stand to see lower overall energy-related costs from the switch to electricity, if executed well, despite a requisite doubling in electricity sector investment.

Still, government intervention will be required to overcome uneven near-term cost impacts and ensure an efficient and equitable transition. From the Council's perspective, these findings point to the critical need to focus efforts on (1) minimizing overall costs, so that the affordability impact on all Canadians skews even more toward net savings; and (2) addressing fairness concerns, in particular for lower-income households and certain regions of the country that stand a greater chance of seeing cost increases.

44 For the purposes of the modelling, Transition Accelerator defined low-income households as those with the lowest 20 percent of household income.
45 Canadian Urban Sustainability Practitioners Network. 2019. Equity Implications of Energy Poverty in Canada.
46 On the other hand, the Council notes that the cost of stranded gas assets under this scenario was not included.

"Governments must demonstrate that Canada is a good place to do business. Investor confidence is paramount to attracting private capital investments."

ATCO

HOW DO WE ENSURE AFFORDABILITY?

For the Council, a focus on affordability means a dual focus on:
Overall cost — reducing investment needs as much as possible; and
Fairness — supporting those who might bear a disproportionate burden.

Overall Cost

Canada's net-zero transition will be a capital-intensive undertaking. The overall investment required to fully decarbonize the nation's electricity production, while expanding to meet new demand, is estimated to be approximately $1.4 trillion, including both private capital and funding from multiple levels of government (refer to Box 6 and Figure 15 on page 56).

The overall total falls within a broad potential range—$1.1 trillion to $2.0 trillion—highlighting the opportunity for strategic action to put downward pressure on costs.

Better planning can lower costs

Better planning creates greater certainty for utilities, developers, and investors. This can significantly reduce financial risks and, by extension, the cost of capital. Better planning ensures that investments are directed efficiently towards projects that are essential for the transition, avoiding misallocation of resources and enabling a more streamlined path to decarbonization.

The Council believes that improved planning and market predictability can put downward pressure on costs. This is addressed in the Council's recommendations in the section "ALIGN on Goals" (see page 72).

Streamlined processes can enable rapid build-out of electricity projects

The Council believes that significant improvements to project approval processes and Indigenous engagement can put downward pressure on costs and attract much-needed early development risk capital. Similarly, proper consultation and partnership with Indigenous Nations and communities can reduce uncertainty, disruption, and delays. These are addressed in its recommendations in the section "ENABLE the Build" (see page 92).

Energy efficiency and demand-side management can limit costs

A cost-effective transition means optimizing, not maximizing. Significant improvements to energy efficiency and load flexibility can dramatically reduce the need for expensive new electricity infrastructure, making both the required scale and speed of the clean power build-out more achievable and affordable.

From 2000 to 2019, energy efficiency improved by 12.3 percent, resulting in reduced annual energy demand of 815 petajoules and saving Canadians $23.2 billion in 2019 alone.[47] Going forward, research indicates that the adoption of net zero energy ready building codes could save households $3 billion per year.[48]Another real-world example of enabling household and government savings can be found in Nova Scotia: an investment in demand-side management (DSM) by ratepayers of $173 million for a three-year period is projected to avoid $542.8 million in future supply costs. This investment is also expected to result in reduced average customer energy bills of between one and eight percent.[49]

Energy efficiency and DSM also enhance electric system reliability by alleviating stress on power grids and facilitating the management of peak demands using flexible loads.[50] Prioritizing energy efficiency and DSM also benefits consumers in all sectors, reducing energy bills and aiding housing affordability and business competitiveness.

The Council believes that significant gains in energy efficiency and DSM can significantly reduce costs. This is addressed primarily in a suite of recommendations in the section "SAVE Energy to Lighten the Load" (see page 141).

"Fast-tracking high priority, clean energy projects by addressing bureaucracy, duplication, overlap, under resourcing, and excessive information requirements that lead to unnecessary delays is vital."

ASSOCIATION OF POWER PRODUCERS OF ONTARIO

"The most sustainable form of energy is the kilowatt hour you don't need to produce."

EFFICIENCY MANITOBA

47 NRCan. 2019. Energy Efficiency Trends in Canada.
48 Efficiency Canada. 2023. Building for Tomorrow: Making Canada's new housing supply high performance and climate ready.
49 Nova Scotia Utility and Review Board. 2023. Decision on EfficiencyOne's Demand Side Management Plan 2023-2025 (M10473).; Nova Scotia House of Assembly. March 8, 2023. Committee on Public Accounts, Hansard transcript.
50 IEA. 2024. Electricity – 2024.

Fairness

Minimizing total costs is crucial, but addressing fairness is equally important to the overall success of Canada's energy transition. Achieving Canada's net-zero goal will be a much greater challenge for certain regions and for some lower-income Canadians, who may struggle to afford the higher-cost equipment that saves energy and bills in the long run.

The Council believes that measures to accelerate the transition to clean electricity must manage these distributional impacts carefully, which should include shifting a part of the cost from ratepayers to the tax base to balance out the overall costs. The Council's Recommendation 18 addresses this (see page 124).

Impacts on lower-income households

The affordability modelling conducted for the Council suggests that roughly six in ten lower-income households will see net savings from the transition to electricity. However, lower-income households – especially those who currently heat with gas or do not own a vehicle – are more vulnerable to price increases.

The Council believes that the federal government, working with provinces and territories, has a role in enabling more lower-income households to see net savings and to minimize net costs. In particular, the federal government can help them access cost-saving opportunities that they might otherwise have to forego. The Council's Recommendation 22 addresses this (see page 139).

Impacts on fossil fuel-reliant provinces

As the analysis suggests, some provinces—particularly those that are more reliant on fossil fuels today—are more likely to face increased costs during the transition. That is particularly true for Alberta, Saskatchewan and Nova Scotia, the jurisdictions identified earlier (see the section "Challenges for Canada" on page 37) as facing the greatest challenges on the road to decarbonization.

The Council believes that the federal government can help to minimize cost increases in certain provinces to avoid exacerbating regional cost disparities. In particular, the Council strongly supports that the federal ITCs applicable to electricity should skew disproportionately toward those provinces that need the most investment to achieve their decarbonization goals.[51] The Council also believes the federal government can and should go further, in particular by enabling and strongly supporting inter-regional transmission aimed at lowering the cost of decarbonization in those provinces. The Council's Recommendation 19 addresses this (see page 128).

51 Announced in Budget 2023.

Impacts on remote, Indigenous, and Northern communities

Finally, the affordability modelling commissioned by the Council was not able to examine impacts on remote, Indigenous, and Northern communities. The Council believes that there is a risk that those communities will be disproportionately impacted, which the federal government must address. This is especially true where access to new, efficient equipment is limited or cost-prohibitive, or where policies do not adequately reflect the unique conditions in those communities. The Council's Recommendations 20 (see page 133) and Recommendation 21 (see page 135) in the section "SUPPORT the Transition" address this.

Impacts on business and industry

Competitive and affordable rates are not only important for electricity suppliers (who need competitive rates of return to attract capital), but also for commercial customers. Supplying affordable, clean energy for business and industrial electricity users not only enhances their competitiveness but improves Canada's ability to retain and attract such firms, notably those in electricity-intensive, emissions-intensive and trade-exposed sectors such as aluminum, mining and forestry.

Affordable power is also vital for small- to medium-sized enterprises that may lack the capacity to adopt energy efficiency measures on their own. Many small businesses and manufacturers are important suppliers for larger projects and play a critical role in the energy transition ecosystem. The majority of the Council's recommendations address affordability (see the summary table on page 58).

"The transition is not just a dollars-for-carbon calculation – the cost of not participating in the changing economy, and not being included in the transition, despite the North suffering disproportionately from climate change, needs to be recognized."

INUIT TAPIRIIT KANATAMI

RELIABILITY

Reliable electricity is vital to the success of Canada's economy and to the health of all Canadians. Canadians require reliable power systems for countless daily needs, from winter warmth to cold refrigerators. The energy transition will only add to this list as new equipment, vehicles and industrial sectors shift from fossil fuels to electricity. These changes will amplify the scale of the risk that electricity systems face and place even greater importance on reliability.

Mitigating these risks is a crucial role for net-zero electricity policies, particularly as many of the country's electricity systems are already under significant strain due to aging infrastructure and the damaging impacts of an increasingly volatile climate.[52]

The need for flexibility

The challenge of reliably decarbonizing and expanding clean electricity generation in Canada is not only one of pace and cost, but also of technical complexity. For provinces with significant transmission interties and/or a strong base of existing hydropower or nuclear generation, the addition of variable power sources such as wind and solar is relatively straightforward. Provinces with weak transmission interties and without clean, dependable power already in place, however, will encounter more significant challenges.

New technology is improving rapidly – from advancements in nuclear to new options like utility-scale batteries, long-duration storage systems, and a range of technologies to adjust the timing of demand. Despite this, the transition will not be an easy one, especially for those regions whose systems are currently primarily fossil fuel-reliant.

This is not a justification for complacency. Still, **the Council believes that, for fossil fuel-reliant regions, the federal government must ensure sufficient flexibility in its decarbonization requirements so that the technical challenges can be overcome without risking reliability**. The Council's Recommendation 5 addresses this (see page 85).

52 Kanduth, A. and Clark, D. 2022. Scoping Paper: Enhancing the Resilience of Canadian Electricity Systems for a Net Zero Future. Canadian Climate Institute.

The role of inter-regional transmission

The diversity of Canada's electricity landscape further amplifies the risks to reliability. In practice, there is no single Canadian electricity system. Electricity falls squarely under provincial and territorial jurisdiction, and each province and territory maintains its own independent system, complete with unique generation mixes, market structures, ownership models, oversight regimes and pricing mechanisms.

This decentralization, a hallmark of the Canadian federation, must be respected. But these siloed systems can lead to sub-optimal results, particularly in the case of inter-regional transmission.

The Council has identified the reinforcement and expansion of inter-regional transmission as a critical measure to support the reliability of Canada's electricity systems, especially in fossil-reliant regions such as Alberta, Saskatchewan, and Nova Scotia. Inter-regional transmission networks (often referred to as "interties") can enhance reliability (and limit costs) by exploiting synergies between adjacent systems.[53] [54]

Interties accomplish this most notably by:

- **Expanding access to lowest-cost supplies:** Interties enable more Canadians to access low-cost electricity supplies.[55] For example, Alberta has some of the country's best wind and solar resources, while British Columbia has some of its most abundant hydropower. Enhanced trade could provide Albertans access to British Columbia's dependable hydropower and enable British Columbia to benefit from Alberta's variable renewable power at lower cost than building its own.
- **Smoothing costly demand peaks:** Connecting grids with complementary load profiles can diversify peak events (for example, weather-related spikes), diversify daily peaks (for example, through time zone differences), and broaden the pool of customer-enabled "demand response" contributions.[56]
- **Mitigating supply risks:** Interties hedge against short-, medium-, and long-term supply risks, including but not limited to variability in resources (due to wind speeds, cloud cover or, rainfall), planned or unplanned plant shutdowns, unexpected changes in demand, project construction delays, and regulatory changes.

Despite these and other benefits, electricity trading within Canada currently falls far short of its potential. While some inter-regional enhancements are moving forward, these efforts are neither as systematic nor as extensively developed as in other countries with similarly decentralized governance.[57]

The absence of a cohesive approach to enabling greater internal electricity trading makes the transition more challenging, in particular for fossil-reliant regions.

The Council believes systematically expanding inter-regional transmission can enhance reliability and benefit all provinces and territories, particularly those that are fossil fuel-reliant. This is addressed in Recommendation 19 in the section "SUPPORT the Transition" (see page 128).

53 Canadian Climate Institute. 2022. Electric Federalism: Policy for Aligning Canadian Electricity Systems with Net Zero.; Azar, L. 2022. Transmission Planning for 100% Clean Electricity. Energy Systems Integration Group System Planning Working Group; Madrigal, M. and Stoft, S. 2012. Transmission Expansion for Renewable Energy Scale-Up: Emerging Lessons and Recommendations. World Bank.
54 Dolter, B. and Rivers, N. 2018. The cost of decarbonizing the Canadian electricity system. Energy Policy, Vol. 113 135-148.
55 Shaffer, B. 2021. Technical Pathways to Aligning Canadian Electricity Systems with Net Zero Goals. Canadian Climate Institute; Meadowcroft, J. et al. 2021. Pathways to net zero: A decision support tool. Transition Accelerator.
56 Standing Committee on Natural Resources. 2017. Strategic Electricity Interties. 7th report, 42nd Parliament, 1st session.
57 Ibid.

WESTERN RELIABILITY LINE: Value Stack

FIGURE 16. BENEFITS OF INTER-REGIONAL TRANSMISSION LINES: THE EXAMPLE OF A HYPOTHETICAL WESTERN HDVC LINE.

Focus on demand-side solutions

Grid reliability will also benefit from prioritizing efficiency and other demand-side resources. By reducing demand through efficiency enhancements and enabling grids to manage consumption more dynamically—especially during peak demand periods—can safeguard reliability, save money, and buy more time for the energy transition. Responsive loads will be crucial for reliability, enabling grids to shed significant amounts of electricity use during extreme events and other times of high demand. Distributed resources, including generation and storage resources, will also create significant improvements in grid resilience.

The Council believes that demand-side solutions can enhance reliability. This is addressed primarily in its recommendations in the section "SAVE Energy to Lighten the Load" (see page 141).

The Council's Six Principles for a Reliable Electricity Grid

1. Dependable supply

Reliability requires access to dependable supplies that can be called upon in virtually any situation. This includes baseload supplies such as nuclear and load-following sources like hydro, thermal plants, and battery storage.

2. Diversified supply

Because no electricity source is 100-percent secure (drought, calm winds, cloud cover, frozen pipes and unscheduled maintenance can all disrupt output), a diversity of sources is vital to minimize risks.

3. Distributed supply

Distributed generation and storage resources can provide significant improvements for both grid and customer resilience.

4. Efficient loads

Electricity supply is only half of the equation; efficiency measures can significantly reduce demand and customer vulnerability to supply disruptions.

5. Responsive loads

Enabling grids to shed or shift significant amounts of electricity demand during extreme events and other times of high demand is crucial for reliability.

6. Resilient grids

Transmission and distribution infrastructure is more resilient to extreme climate events (wildfires, wind, and ice storms) when it has built-in, deliberate redundancies.

INDIGENOUS PARTICIPATION

The History

Indigenous communities in Canada have long been unjustly harmed by the development of electricity projects in Canada. From the displacement of homes to the destruction of hunting and fishing grounds to the exclusion of Indigenous perspectives from project development, the electricity sector's historical, colonial relationship with the Indigenous peoples of Canada (First Nations, Inuit, and Métis) is unacceptable and must not be perpetuated.

Canada's legislative history complicates the needed change. The Indian Act legislatively prohibits Indigenous Nations from participating in economic benefits derived from their ancestral lands,[58] even as the Canadian Constitution recognizes that Indigenous peoples have specific and unique rights and entitlements, resulting from their original occupation of Canada.[59]

In recent years, Canada has recognized and begun taking responsibility for these historic failings and has made commitments to ensure that Indigenous Nations and communities are no longer excluded from economic development.[60] In response, Indigenous nations have expressed a clear interest in participating in — and even leading — the energy transition and receiving its benefits.

58 The Indian Act has numerous clauses restricting Indigenous economic participation including prohibiting Indigenous governments from taxing residents, from selling resources on Reserve lands, and from borrowing against real property without the express written consent of the Minister of Indigenous Services.

59 Department of Justice. Section 35, Rights of the Aboriginal Peoples of Canada. The Constitutions Acts, 1867 to 1982.

60 For example, via the National Benefits-Sharing Framework (NRCan. 2023. National-Benefits Sharing Framework).

The Challenges

Achieving Canada's net-zero target will require substantial new electricity infrastructure. By and large, this infrastructure will need to be built on the ancestral lands of Indigenous peoples across the country.

By embracing Indigenous Nations and communities as full partners in clean electricity projects and actively enabling those partnerships, Canada has a unique opportunity to begin repairing the unequal relationship that has long dominated energy and resource development, and to harness a powerful force for economic reconciliation.[61]

Many Indigenous organizations and communities have already taken steps to advance clean electricity projects.[62] But significant barriers remain for both industry and Indigenous Nations and communities.

To ensure meaningful and equitable participation, project developers building out energy infrastructure must identify and engage with Indigenous Nations and communities with sufficient time and leeway to allow them to shape and influence projects in ways that limit impacts and generate commercial participation options. For Indigenous communities, the barriers include insufficient access to financing and industry-specific technical knowledge, as well as limited human-resource capacity to actively engage with project development.

The Opportunity

Indigenous commercial participation in electricity projects brings significant economic benefits to Indigenous communities and the broader Canadian economy.[63] Ownership of assets, revenue-sharing agreements, equity partnerships, job creation, and supply-chain opportunities contribute to the economic well-being of Indigenous communities and allows them to assume a stronger role in decision-making. Indigenous participation also supports the diversification and growth of the Canadian electricity sector, while enhancing certainty and decreasing risk. In remote regions, this approach can also help reduce reliance on dirty and expensive diesel.

By taking into account the lessons learned from the negative impacts and exclusions of previous eras, the development of net-zero electricity infrastructure offers a substantial opportunity to generate benefits and help to advance economic reconciliation.

The Council believes that with increased understanding – and facilitation – of Indigenous rights, the energy transition offers an unprecedented opportunity to accelerate economic reconciliation. The Council's Recommendation 14 (see page 112). Recommendation 20 (see page 133), and Recommendation 21 (see page 135) all address this.

61 Doyle, B., Jacobs, D., Jones, C. 2021. Decarbonizing Electricity and Decolonizing Power: Voices, Insights and Priorities from Indigenous Clean Energy Leaders; Indigenous Clean Energy. 2022. Waves of Change: Indigenous clean energy leadership for Canada's clean, electric future. Canadian Climate Institute.

62 Hoicka, C., Savic, K. and Campney, A. 2021. Reconciliation through renewable energy? A survey of Indigenous communities, involvement, and peoples in Canada. Energy Research & Social Science Volume 74; Indigenous Clean Energy. 2022. Indigenous-led Clean Energy Project Map.

63 Indigenous Clean Energy. 2020. Accelerating Transition: Economic Impacts of Indigenous Leadership in Catalyzing the Transition to a Clean Energy Future Across Canada.

Indigenous Energy Projects

Indigenous communities have taken the lead on clean electricity projects from coast-to-coast-to-coast. According to the non-profit group Indigenous Clean Energy, as many as 2,100 micro-scale or small renewable energy systems, 200 medium-to-large renewable projects, and more than 19 transmission projects with Indigenous involvement are either in operation or in the final stages of planning or construction.[64]

Some examples of groundbreaking Indigenous initiatives include:

- The Wataynikaneyap Power Transmission Project, majority-owned by 25 First Nations in partnership with FortisOntario, which will connect 17 remote communities that are currently reliant on diesel power to the Ontario power grid via 1,600 kilometres of transmission lines. The project is expected to reduce electricity rates, decrease emissions, increase reliability, and support local economic development.
- Cowessess First Nation in southern Saskatchewan has led development of both the Awasis solar project (10 MW)[65] and the Bekevar wind project (200 MW).[66] Awasis is majority-owned by the First Nation's investment arm, and the developer Elemental Energy worked closely with the community on capacity building, employment, and training opportunities. The Bekevar project is Saskatchewan's largest wind power project and is jointly owned with UK-based Innagreen, creating equity investment and training opportunities for community members. It will provide more than 100,000 homes with clean electricity as the province moves off coal.
- In Fort Chipewyan in northern Alberta, the Athabasca Chipewyan First Nation (ACFN), the Mikisew Cree First Nation and the Fort Chipewyan Métis Association collaborated with ATCO Electric to build a 2.2-MW solar farm.[67] The project was the first of its kind in Alberta and represented a significant step forward for partnerships between utilities and Indigenous Nations and communities. The project has reduced the need for almost a million litres of diesel per year and supplies a quarter of local electricity needs. The ACFN has gone on to partner in the development of three larger solar plants in southern Alberta.[68]

64 Indigenous Clean Energy. 2022. Indigenous-led Clean Energy Project Map.
65 Elemental Energy. 2024. Operating Project, Awasis Solar
66 SaskPower. 2024. Bekevar Wind and Power Line Project
67 Three Nations Energy GP Ltd. 2023. Three Nations Energy Solar Farm.
68 Greenplanet Energy Analytics. 2023. ACFN – Concord Solar Partnership Launches Three Farms.

PART 2

SEIZING THE OPPORTUNITY

Council Recommendations

The Council's terms of reference allow for the consideration of actions needed at every level of government. Given that it was established by the federal government, however, the Council has focused on providing advice regarding federal policy options for the electricity transition. Many of the recommended policies aim to support provinces and territories in their work, while respecting their jurisdiction and ultimate authority over electricity systems.

What should' the federal government's role look like, and what kinds of policy changes will make the path easiest to navigate for every province and territory?

The Council has taken a pragmatic approach. The recommendations that follow are focused on addressing "pain points"— clearly identified challenges and potential impediments to the pace, scale, affordability, and cost competitiveness of the transition. Acknowledging Canada's diversity in electricity systems, the Council has chosen not to focus on specific technologies.

The Council's recommendations fit into four critical themes:

1. **ALIGN on goals to ensure that the path forward is clear and decision-makers can commit;**
2. **ENABLE the build so that critical projects can move forward expeditiously and with Indigenous participation;**
3. **SUPPORT the transition with additional funding of targeted needs to ensure all Canadians benefit; and**
4. **SAVE energy to lighten the load and thereby minimize investment needs and improve the likelihood of achieving Canada's goals reliably and affordably.**

The primary role for the federal government in this new phase of the electricity transition is to improve readiness and enable decision-makers – including other levels of government, Indigenous rightsholders, the electricity industry in general, consumers, and stakeholders – to make decisions clearly.

Canada's challenge: to ensure an affordable, reliable and inclusive transition

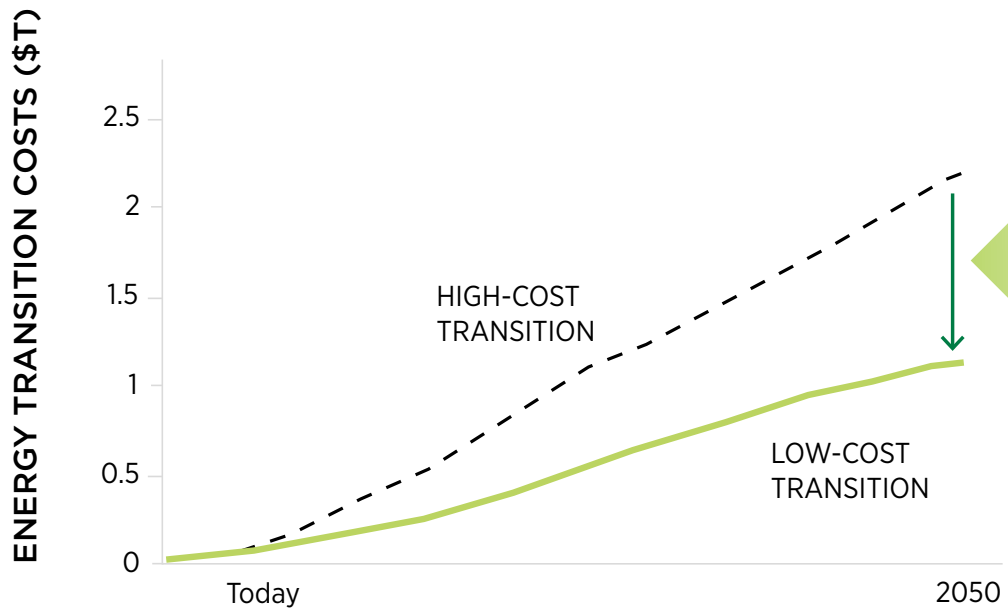


FIGURE 17: THE STEPS FOR A MORE AFFORDABLE, RELIABLE AND INCLUSIVE TRANSITION.[69]

The steps for a more affordable, reliable, and inclusive transition:

ALIGN on goals

ENABLE the build

SUPPORT the transition

SAVE energy to lighten the load

69 Capital investment forecast from Transition Accelerator analysis presented in Box 7

ALIGN ON GOALS

ALIGN on Goals

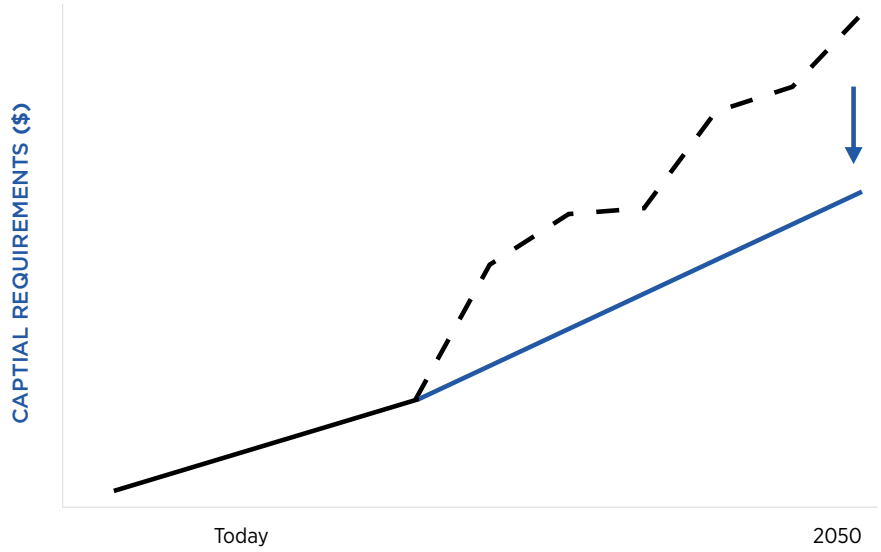


FIGURE 18: ILLUSTRATIVE DIRECTIONAL IMPACT OF 'ALIGN ON GOALS' RECOMMENDATIONS

Aligning policies, mandates, and plans offers greater certainty to decision-makers and supports a lower-cost transition for all.

On the surface, Canada's current climate and energy landscape may appear robust, featuring an array of adopted and planned policies at the federal, provincial, and territorial levels. But look below the surface, and it remains **riddled with a lack of clarity, consistency and alignment that is impeding faster progress**.

Going forward, the federal government needs to take specific actions to achieve the following:

- Urgently finalize the rules of the game, in particular regarding the Clean Electricity Regulations (CER) and ITC programs, so that planning can be locked in and investment decisions can move forward;
- Clearly establish the ways forward – a range of pathways and roadmaps for different regions of the country – so that all players in the electricity sector can plan effectively and minimize costly mistakes;
- Ensure the mandates of key institutions are aligned with the needs of the electricity transition, so that they are working in lockstep and not at cross purposes;
- Provide sufficient flexibility so that each region can define a path that makes the most sense for its circumstances, even as all work toward the same ultimate goal; and
- Ensure that data is transparent and readily available to facilitate proper analysis and planning and enhance trust and cooperation among different levels of government.

While the Council recognizes the important balancing act between thoughtful and timely decision-making, the more expeditious advancement of net-zero policies is essential to enable those making critical investment decisions to move forward with clarity, particularly given the federal government's 2035 target for a net-zero electricity system.

POLICY CLARITY NOW AND IN THE FUTURE

Findings

Clear policy direction is essential to empower investors, planners, and decision-makers in driving the energy transition

Policy and regulatory clarity are vital prerequisites for facilitating cost-effective investments to expand the electricity sector.[70]

Canada's current policy environment is in **urgent need of additional clarity** to allow investors, planners, Indigenous Nations and communities, and other decision-makers to make timely choices about electrification now and in the future. Without clearer guidance on the policies and pathways best suited for pursuing Canada's climate goals, investors may be hesitant to finance projects in Canada. Not only is policy clarity critical for capital attraction, but it will also improve competitiveness and enable more efficient international trade (see Recommendation 15 on page 116).

The Council believes energy roadmaps are critical tools for provinces and territories to provide policy clarity

Energy roadmaps are comprehensive strategies developed by provincial or territorial governments that articulate their independent visions for the evolution of their energy systems to meet climate goals by 2050, incorporating five-year milestones and the perspectives of Indigenous rightsholders. They provide guidance to regulators and other market actors on how a provincial or territorial government intends to manage its energy transition. These roadmaps, when informed by comprehensive modelling of the costs and trade-offs of various options, can guide utilities, regulators, investors, Indigenous Nations and communities, developers, and other stakeholders in determining which projects to pursue or to support. Roadmaps can also help decision-makers to prioritize projects, for example by designating certain projects as being in the national interest and deserving of fast-track approval.

Some Canadian jurisdictions already leverage these tools. For example, the Ontario government's roadmap[71] examines the current status of the province's electricity system and outlines ways to evolve it for the needs of the 2030s and 2050.

Roadmaps of this kind provide policy clarity and a defensible basis for regulatory decisions. They are therefore essential for the task of producing a mandate that incorporates climate goals for Crown utilities, regulators, system operators, and permitting and approval authorities.

70 Sawyer, D., Griffin, B., Beugin, D., Forg, F. and Smith, R. 2023. Independent Assessment of Canada's 2023 Emissions Reduction Plan Progress Report. Canadian Climate Institute.
71 Ontario Ministry of Energy. 2023. Powering Ontario's Growth: Ontario's Plan for a Clean Energy Future

"Many of the challenges associated with expanding the mandate of economic regulators could be mitigated through clear policies, pathway assessments, or net-zero energy roadmaps."

NOVA SCOTIA UTILITY AND REVIEW BOARD

Pathway assessments can inform the development of energy roadmaps

Pathway assessments are economy-wide studies commissioned or developed by provincial and territorial governments to inform energy system planning and policy. These assessments analyze resource scenarios and energy-system development options available in a region to align with climate goals, thereby informing the development of energy roadmaps. They can also assist governments, utilities, regulators, and other actors in building consensus regarding trade-offs and costs, the evaluation of options, and the identification of priority actions. Some provinces, including Québec and Ontario, already use pathway assessments to guide their strategic planning.[72] [73]

Pathway assessments can complement the more granular assessments undertaken by utilities or system operators. They can be developed by individual jurisdictions or at the broader regional level. Regional-level assessments can help identify opportunities that would not be apparent without a regional lens. Assessments can also incorporate distributed energy resources (DERs) and DSM to guide decision-making that is more reflective of the role that all options can play.

Energy roadmaps and **pathway assessments** are important tools for provinces and territories to employ in order to create greater policy clarity for the decarbonization of their energy systems.

- A *pathway assessment* is a comprehensive study of all credible energy pathways to achieve net-zero or carbon-neutral objectives by a given date.
- An *energy roadmap* is a visioning document that translates government priorities into actionable guidance for utilities and system operators, and also provides policy guidance to ensure informed and aligned decision-making by regulators. Roadmaps include specific objectives and associated actions.

72 Government of Québec. 2021. Rapport final: Trajectoires de reduction d'emissions de GES du Quebec. Prepared by Dunsky Energy + Climate Advisors.

73 Ontario Ministry of Energy. 2022. Cost-effective Energy Pathway Study for Ontario. Prepared by Esmia Consultants.

RECOMMENDATION 1:
Expedite the clarification of critical electricity policy rules

The Council recommends that the federal government expedite policy and regulatory frameworks, as well as tax and trade measures related to electricity systems, to clarify climate targets and support their achievement via climate accountability frameworks. These include the *Clean Electricity Regulations*, the ITCs, the Output-Based Pricing System, tax and trade measures, the *Impact Assessment Act*, and other measures designed to drive electrification and the expansion of electricity systems needed to support it.

Implementation Details

A. Expedite several work-in-progress policies and reviews that affect the supply side of electricity:

i. Provide clarity on the final details of the Clean Electricity Regulations (CER) after undertaking the necessary consultations and incorporating flexibility by the end of 2024;

ii. Finalize the Clean Technology and Clean Electricity ITC by December 2024 at the latest;

iii. Table amendments to the Impact Assessment Act in Parliament by March 2025; and

iv. Initiate an immediate review of the treatment of electricity generation under the federal Output-Based Pricing System (OBPS), in advance of the broader review of the OBPS scheduled for 2026.[74]

B. Maintain policies that drive electrification in ways that are flexible and cost-efficient, and where necessary, clarify the future stringency and respective roles of these policies. This includes policies such as:

i. The carbon pricing fuel levy;

ii. Subsidies and other types of supports (e.g. energy efficiency in buildings, heat pumps, electric vehicles); and

iii. Codes and standards (e.g. Zero-Emissions Vehicle mandates, appliance standards [see Recommendation 26 on page 154] and proposed changes to the Canadian Electrical Code [see Recommendation 17 on page 119]).

What can provinces and territories do?

Sub-national jurisdictions can provide support for the clarification of federal policies by working in a collaborative and constructive manner with the federal government through cooperative mechanisms and consultations.

74 Clarifying the level of industrial carbon pricing in the electricity sector is critical to provide investors certainty for project planning, particularly those prior to 2035. This was raised in several written submissions to the Council.

RECOMMENDATION 2:
Encourage energy roadmaps

The Council recommends that the federal government encourage and support the development of provincial and territorial energy roadmaps for a net-zero or carbon-neutral energy system by 2050, to include Indigenous perspectives and ideally to be informed by pathway assessments.

Implementation Details

To support provinces and territories in developing their energy roadmaps, the federal government should:

A. Regularly engage with regional policy-makers, utilities, regulators, and Indigenous rightsholders in forums to share lessons learned and identify best practices.

B. Share best practices and provide guidance on information to include in energy roadmaps (see Recommendation 6 on page 86). These guidelines should include key roadmap components, such as the setting of five-year milestones, alignment across energy system actors including electricity and gas, scoping to include all energy systems, developing a participatory engagement process, and a consideration of labour market needs (see Appendix A on page 158).

C. Provide additional support (beyond funding alone) for jurisdictions and communities with the least expertise and resource capacity to develop energy roadmaps.

D. Where roadmaps are available, the federal government should use these resources to inform its policy development initiatives as they relate to each region or jurisdiction, including in defining Clean Electricity Projects of Canadian Interest (see Recommendation 9 on page 97 and Recommendation 19 on page 128).

What can provinces and territories do?

To support the federal government's development of policies that accommodate the varying needs and capacities of different jurisdictions, provinces and territories can commit to producing, maintaining, and regularly reporting on jurisdictional and/or regional energy roadmaps that outline their energy system plans over five-year periods for provincial and territorial stakeholders. Provinces and territories would determine the most appropriate pathways and details to include in the energy roadmaps, in accordance with the resources available to them, including opportunities for inter-regional transmission. (Advice with respect to information that be included in these roadmaps is presented in Appendix A on page 158).

RECOMMENDATION 3:
Encourage pathway assessments to inform energy roadmaps

The Council recommends that the federal government support provinces, territories and Indigenous Nations and communities in their development and regular updating of economy-wide pathway assessments that explore available and credible pathways for achieving a net-zero or carbon-neutral economy by 2050. These pathways can inform the development of energy roadmaps and include opportunities for inter-regional cooperation.

Implementation Details

The federal government can play an enabling role by:

A. Supporting the regular development and updating of jurisdictional and/or regional pathway assessments and assisting in the coordination and development of assessments that consider inter-regional pathways and other opportunities, including financial support for meaningful Indigenous participation.

B. Encouraging jurisdictions, utilities, system operators, regulators and Indigenous Nations and communities to engage in forums where they can share related lessons learned. The federal government may fund and/or convene forums that support efforts to maintain grid reliability, enhance system resilience, ensure cost-effectiveness, and enable the deployment of innovative technologies and practices.

C. Facilitating the development, identification and sharing of best practices for pathway assessments, which can both help improve their quality and accelerate their development (see Appendix A on page 158).

What can provinces and territories do?

Provincial, territorial, and municipal governments can work alongside utilities, regulators, and system operators to develop economy-wide pathway assessments that complement the more granular ones that some of these actors may produce. Available resources in their jurisdictions can be used to provide impartial perspectives on opportunities and challenges, and to ensure the inclusion of Indigenous perspectives, in alignment with Canada's reconciliation objectives.

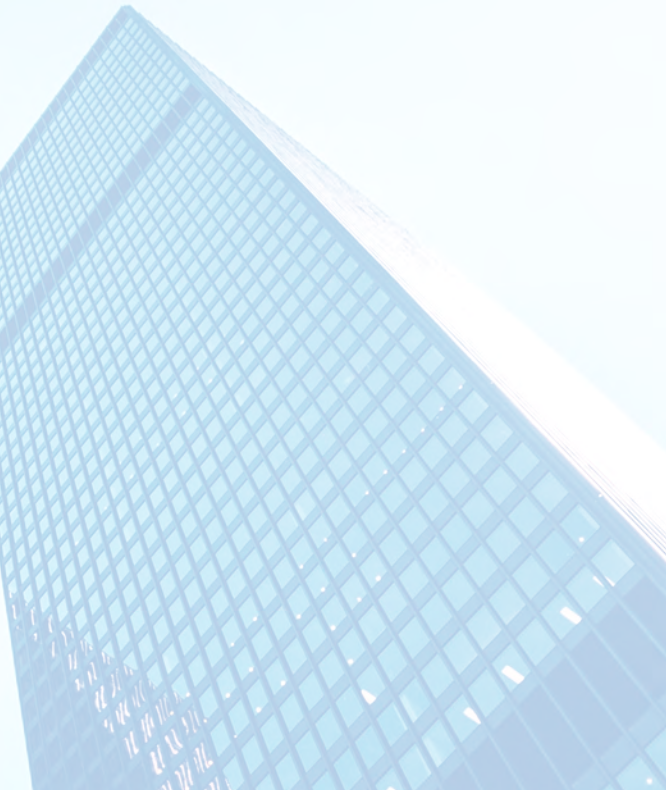
New Brunswick's Pathways to Net-Zero Emissions

The provincial government of New Brunswick developed its electricity systems pathway assessment, Pathways to net-zero greenhouse gas emissions, in 2023.[75] The assessment examines the province's options for achieving its economy-wide net-zero goal using available electricity, bioenergy, hydrogen, and non-energy emissions sources. It found that the safest bet for all pathways to net-zero involved using low-carbon energy, renewables, and storage to meet most new electricity demand in the province. Carbon removal was seen as being required to counterbalance residual emissions, and the province's economy could expect to continue to grow while pursuing the goal.

75 Navius Research. 2023. Pathways to net zero greenhouse gas emissions in New Brunswick. Report prepared for New Brunswick's Climate Change Secretariat.

"Evolving from the traditional least-cost regulatory model to one that values climate-related social benefits will be perhaps the most important catalyst to accelerate the clean energy transition."

FORTIS INC.



MANDATES CONSISTENT WITH CLIMATE GOALS

Findings

Regulatory and governance frameworks must be updated

To align electricity systems with climate goals, a range of public institutions, including energy regulators, must coordinate their processes and mandates. Climate change goals are often not explicitly included in regulator mandates, which can be a barrier to approving projects aligned with net-zero goals. As a result, agencies can sometimes operate at cross purposes, each protecting their respective mandate areas, leaving projects to advance more slowly due to uncertainty.

Aligning regulatory and governance frameworks that oversee Canadian energy decision-makers with current priorities, notably net zero emissions, is essential to achieve the pace, scale and innovation a cost-effective energy transition will require.

Within Canada, provincial and territorial governments have jurisdiction over energy within their boundaries. Some provinces have begun to align their regulators' (and/or Crown utilities') mandates with net zero objectives – Nova Scotia recently did so, and at least two others are expected to do so in the coming year.

While it is imperative that regulator and Crown mandates be aligned in all provinces and territories, the federal government must also do its part. Currently, net-zero targets remain absent from the mandates of key federal regulators involved in electricity project development, including the Canada Energy Regulator (CER), the Canadian Nuclear Safety Commission (CNSC), and Fisheries and Oceans Canada (DFO).

DFO provides a valuable example: its requirements for studying the impacts on fish populations from hydropower or tidal power development, for example, need to be weighed against the threat to certain fish species from the harmful effects of climate change.[76] The department may therefore need direction in seeking a balance between protecting fisheries and not placing excessive barriers on offshore renewable energy development.

A review of climate and energy policies in jurisdictions with important similarities to Canada[77] found that some are beginning to broaden the mandate of their energy regulators. The United Kingdom, for example, has brought in new legislation that amends the duties of its energy regulator[78] to include net-zero targets and five-year carbon budgets.

Reform of U.K. Energy Regulatory Regime

In 2023, the British government passed the Energy Act to transform the country's energy system, strengthening energy security, supporting the achievement of net-zero goals, and ensuring household energy bills are affordable in the long-term.79 The Act also amends the duties of the U.K.'s energy regulator to include reference to net-zero targets and five-year carbon budgets in the country's Climate Change Act (2008). This requires the regulator to consider how its decisions may assist the Secretary of State in meeting the government's net-zero target, while protecting the interests of existing and future consumers. In mid-2024, the regulator and the U.K. government will be launching an independent public corporation to take responsibility for planning the country's electricity and gas.[80]

76 The 2024 Task Force on Sustainable Tidal Energy Development in the Bay of Fundy proposed ways of advancing clean power projects more expeditiously, but noted that consideration of climate change policy issues was outside the scope of the Taskforce work. (Task Force on Sustainable Tidal Energy Development in the Bay of Fundy. 2024. Final Report.)
77 The Council reviewed five jurisdictions (the UK, Germany, Denmark, Australia and New York State).
78 Office of Gas and Electricity Markets (OFGEM). Welcome to Ofgem (Homepage). Accessed April 24, 2024.
79 Government of United Kingdom. October 26, 2023. New laws passed to bolster energy security and deliver net-zero.
80 Energy System Operator. Becoming the National Energy System Operator (NESO). Accessed April 24, 2024.

RECOMMENDATION 4:
Align mandates of relevant authorities with net-zero goals

The Council recommends that the federal government, along with governments across Canada, update and clarify mandates for key authorities, including Crown utilities, energy regulators, system operators, and permitting and approvals authorities, so that mandates include a carbon-neutrality or net-zero objective alongside their existing goals.

Implementation Details

The federal government should implement this by:

A. Modifying the mandates of federal regulatory entities (e.g. CER, CNSC, DFO, Environment and Climate Change Canada [ECCC]) using directives, orders in council, or (ideally) updating enabling legislation, to include carbon neutrality or net-zero objective alongside their respective regulatory mandates.

B. Ensuring that the objectives and programs of Crown corporations such as Export Development Canada, the Canada Infrastructure Bank (CIB) and the Canadian Development Investment Corporation reflect climate goals.

C. Encouraging and providing support to provinces and territories willing to undertake similar mandating of their Crown utilities, system operators and regulators, and help identify best practices for doing so (see Appendix A on page 158).

D. Providing relevant authorities with the required resources (financial and human) and policy guidance — in particular, energy roadmaps and pathway assessments — to fulfill these updated mandates.

E. Adding additional specificity regarding the ways that relevant authorities could fulfill these mandates; for example, orders to electricity regulators that could direct them to consider important new resources along with generation, transmission, and distribution in their decision-making, including DERs and demand-side measures.

Nova Scotia Aligning Regulator Mandates with Net-Zero Goals

The government of Nova Scotia established a Clean Electricity Solutions Task Force in 2023 for the purpose of exploring ways to modernize the province's electricity grid and regulatory environment.[81] The Task Force proposed numerous changes to modernize Nova Scotia's regulatory regime, including aligning with the province's legislated emissions reduction goals, creating an independent energy system operator, implementing amendments for a holistic approach to electricity systems management, and improving policy for affordable residential electricity costs.

Acting on the advice of the Task Force, the Government of Nova Scotia passed its *Energy Reform Act* in 2024, creating two new acts and repealing the former *Utility and Review Board Act*.[82] The changes include the immediate creation of a new Nova Scotia Energy Board, mandated to consider environmental and climate change goals in its decisions. The new legislation also establishes an independent system operator responsible for procurement of new energy and overseeing the integration of renewable energy projects, to be operational by late 2025.[83]

Other provinces are currently reviewing their regulators' mandates with a similar view toward alignment with net-zero emissions goals.

What can provinces and territories do?

Provincial, territorial, and municipal governments can work alongside utilities, regulators, and system operators to develop economy-wide pathway assessments that complement the more granular ones that some of these actors may produce. Available resources in their jurisdictions can be used to provide impartial perspectives on opportunities and challenges, and to ensure the inclusion of Indigenous perspectives, in alignment with Canada's reconciliation objectives.

81 Scott, A. and MacIsaac, J. 2024. Nova Scotia Clean Electricity Solutions Task Force.
82 Government of Nova Scotia. 2024. Legislation to Modernize Electricity System, Improve Regulation; Nova Scotia Legislature. 2024. Energy Reform (2024) Act* - Bill 404
83 Gorman, M. February 27, 2024. Legislation clears the way for overhaul of N.S. energy system. CBC News.

"Provinces and territories have unique supply and demand considerations. A one-sized solution will not fit all."

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR

FLEXIBILITY FOR JURISDICTIONS ACROSS CANADA

Findings

Insufficient flexibility may hinder broader net-zero goals by impacting cost, reliability, and the pace of electrification

The pressures facing each province and territory in this energy transition vary significantly. While remaining focused on its overarching net-zero goals the federal government should ensure that provinces and territories have flexibility within relevant federal policies to choose how they reach those goals and to design and implement their own policies in a manner that considers their unique effects on each region.

In the Council's view, for example, the original *Clean Electricity Regulations*[84] did not provide sufficient flexibility for utilities, system operators, and market participants to achieve the desired balance between decarbonization, cost and reliability. As a result, there could be cost pressures or reliability risks that would put broader net-zero goals out of reach, particularly through impacts on the pace and extent of the electrification of existing non-electrical energy uses. The Council notes that the federal government has recognized that greater flexibility is necessary in the update on its consultation process released in February 2024, but the final regulations have not yet been published.

Similarly, the original conditions for the Clean Electricity ITC proposed in the 2023 federal budget[85] included a requirement for a competent authority in each province and territory to make certain commitments[86] for entities in these jurisdictions to claim the tax credits. The federal government revised those conditions in its 2024 budget, limiting the conditions on net-zero electricity by 2035 to Crown corporations and their respective jurisdictions. The Council believes that further revisions are warranted (see Recommendation 6 on page 86).

84 Government of Canada. 2023. Canada Gazette, Part I, Volume 157, Number 33: *Clean Electricity Regulations*.
85 Department of Finance. 2023. Budget 2023.
86 Original requirements included commitment by a relevant authority to achieve a net-zero electricity sector by 2035, as well as labour and other requirements.

RECOMMENDATION 5:
Prioritize flexibility in policymaking

The Council recommends that when developing and implementing policies that impact the electricity sector, the federal government should prioritize flexibility mechanisms wherever possible, in particular for jurisdictions facing disproportional cost burdens and reliability challenges.

Implementation Details

The federal government can achieve this by:

A. Ensuring that the published version of the Clean Electricity Regulations provides substantively greater flexibility to covered entities than its original version.

B. Examining and mitigating downstream impacts as greater stringency and cohesion is brought into the federal climate policy package, including consideration of Indigenous, Northern, and remote communities in policy design to advance equitable net-zero outcomes.

What can provinces and territories do?

Provinces and territories can continue to actively engage with the federal government to identify their unique needs and requirements for climate policy flexibility. Furthermore, they can develop Energy Roadmaps (see Recommendation 2 on page 78), ideally supported by Pathway Assessments (see Recommendation 3 on page 79), that can clarify how shared goals can be met in ways that are more aligned with provincial needs.

RECOMMENDATION 6:
Focus ITC conditions on energy roadmaps

The Council recommends that the federal government adjust its proposed condition for provincial and territorial Crown corporations to access the Clean Electricity ITC by replacing the current proposal – a provincial or territorial government publicly committing to work towards a net-zero electricity grid by 2035 and demonstrating that benefits flow to ratepayers – with a single requirement to develop and publish provincial or territorial government-led energy roadmaps aligned with 2050 goals.

Implementation Details

A. The federal government should modify the condition currently proposed for the Clean Electricity ITC for a provincial or territorial government to commit to a net-zero electricity system by 2035 to instead focus on the development of energy roadmaps for a net-zero or carbon-neutral energy system by 2050. Modifying the ITC condition to align with the broader energy transition enables provincial and territorial governments to focus on reducing emissions from energy use generally, rather than focusing solely on emissions from power generation. This pragmatic approach would be more likely to encourage decision-making in line with climate goals, while providing flexibility to jurisdictions to define their pathways to achieving those goals.

B. The federal government should remove the condition related to demonstrating that ITCs would flow through to ratepayers. The Council notes that this condition is unnecessary (provinces' and territories' regulatory and market structures are already designed to ensure that such savings flow to consumers) and impractical in its actual wording.

What can provinces and territories do?

In line with this approach, and with Recommendation 2 (see page 78), jurisdictions can develop and publish energy roadmaps to facilitate access for their public utilities in their jurisdictions to the ITC. By design, this modified condition for access to the Clean Electricity ITC recognizes provincial and territorial jurisdiction over energy systems, including discretion over the strategies and pathways they pursue. This more flexible condition also implicitly acknowledges the diversity of energy systems, available resources, and distinct considerations that each jurisdiction must address in their plans.

DATA TRANSPARENCY AND TRUST

Findings

Transparency of federal modelling is a necessity

Modelling and data are used to inform operational planning, policy development, and investment decisions. For example, federal officials use economic and technical electricity models to inform their policy decisions. Similarly, utilities and system operators employ more detailed technical models to inform their daily operations, system planning, and investment decisions.

Trust in the models, input data and assumptions used to inform public policy and investment in the electricity sector is critical for maintaining industry and public confidence in decision-making and for enhancing policy certainty. Unfortunately, privacy, security and confidentiality concerns often limit the availability and sharing of data between sector stakeholders, which impacts the development of effective policies, contributes to industry confusion and frustration with federal decision-making, undermines the confidence in federal and utility policy and investment decisions, and amplifies investor uncertainty. In addition, carbon intensity data, which is growing in importance, is not currently available for electricity systems in Canada.

Stakeholders have expressed frustration with the limited federal transparency of the data used in its decision-making. Despite ongoing engagements with provinces, territories, and industry stakeholders, federal officials sometimes withhold or limit access to the data, models and inputs used in these exercises.

Data sharing can support collaboration and guide progress

Open data-sharing frameworks can enable innovation and enhance investment opportunities. The increasing use of connectivity and artificial intelligence is creating both new opportunities and increased risks for existing and new electricity industry players.[87] Improved access to secure energy systems data, as found in other advanced economies, can overcome hurdles in electricity technology development, market innovation, and the planning and implementation of solutions. It can also enable broader stakeholder participation and investment in distributed energy and other cost-saving, net-zero-aligned electricity technologies.[88]

Electricity is a responsibility of the provinces and territories, and it is important that these jurisdictions track their own progress. However, the federal government is responsible for oversight of national progress, and sharing progress reports at the national level enhances the awareness of transition partners, particularly regarding areas where progress is lagging and more attention is required.

There are existing metrics to evaluate different aspects of the Canadian electricity ecosystem, overseen by various national and sub-national governments and civil society organizations. A single window into these metrics at the national level would be valuable to build momentum toward net-zero and affordability targets, track grid reliability, improve investor confidence[89] [90], and track rate parity between jurisdictions.

Standardizing and sharing high-quality, open and transparent data, models, inputs, and assumptions in a secure and negotiated way can also improve modelling and regulatory and policy decision-making. This enhances private and public confidence in federal policy, supports broader stakeholder participation in the electricity market, and enables more informed, transparent discussions between electricity industry stakeholders.[91] [92] [93]

87 IEA. 2023. Why AI and energy are the new power couple

88 The Canadian Centre for Energy Information (CCEI) is a collaboration between NRCan and Statistics Canada that aims to address this gap. Additional work is required to improve this national effort to provide uniform, streamlined access to near-real time and historical electricity systems data.

89 Canadian Chamber of Commerce. (2022). How We Get There Matters: Establishing a Path to Net-zero in Canada. PWC.

90 Orenstein, M., Millington, D., and Cooke, B. 2021. ESG and the Canadian Energy Sector. Canada West Foundation and the Canadian Energy and Climate Nexus.

91 Hay, S., and Ferguson, A. 2015. Power System Modeling Data: Requirements, Sources and Challenges. The Institution of Engineering and Technology.

92 Wadhera, A., Ayoub. J., and Roy, M. 2019. Smart Grid in Canada 2018. 2019-066 RP-FIN DER-SGNETS, NRCan.

93 Hastings-Simon, S., and Kanduth, A. 2021. Barriers to Innovation in the Canadian electricity sector and available policy responses. Canadian Climate Institute.

RECOMMENDATION 7:
Drive open and transparent data and modelling

The Council recommends that the federal government: (i) make its economic and electricity system models, as well as related data, assumptions, and other model inputs, publicly available in an open and transparent manner; (ii) work with provinces, territories, utilities (including public, private, and Indigenous-owned), and electricity system operators, and explore the use of federal authorities, to develop and implement approaches to electricity system data collection, aggregation and publication, in a manner that respects privacy and system reliability requirements, and makes Canadian data open and accessible in a manner similar to other advanced economies; and (iii) fund supporting entities to enable the collaboration and implementation of common approaches to electricity system data collection, aggregation and publication.

Implementation Details

To implement the recommendation, the federal government should:

A. Direct federal departments and agencies that have developed and managed economy, energy, and electricity-system models internally to consistently make these models, their underlying assumptions and data publicly available in an open, transparent, and consistent manner, in line with the 2014 Government of Canada Directive on Open Government. [94]

B. Direct federal departments and agencies to use the same data and assumptions for similar models across all federal departments and agencies, when evaluating and designing economy, energy, and electricity-system policy measures of the same nature (e.g. the impact of the *Clean Electricity Regulations* on electricity system operations and costs should be modelled using the same technology input assumptions).

i. Federal departments and agencies should be further required to explain any differences between their unique modelling inputs, assumptions and outputs, should any exist (e.g. differences between ECCC and CER models).

C. Convene provinces and territories, utilities, and regulators to develop common, near-real-time, and secure electricity data collection and publication formats and approaches in a way that respects data security, privacy, and system reliability requirements. Ensure that data is published in a common, trusted location with controlled access where necessary for security, privacy, or system reliability, possibly through the Canadian Centre for Energy Information (CCEI), using existing or expanded Statistics Act authorities.

i. Consider using the Energy and Mines Ministers' Conference (EMMC) as a convening opportunity to launch this proposed collaboration with provinces and territories, utilities, system operators and regulators.

94 Treasury Board Secretariat. 2014. Directive on Open Government.

D. Explore existing federal policies, such as the *Statistics Act*, to identify mechanisms already in place to ensure electricity data is available to improve electricity and related energy-sector modelling and unlock innovative technology development and deployment on the grid.

E. Include electricity system models (particularly capacity expansion and production-cost models owned or managed by the federal government) and related data when implementing the Government of Canada Data Strategy for the Public Service[95] and related policies and directives.

F. Provide expanded funding, in concert with new convening activities described above, to:

i. Data collection and modelling organizations, specifically the Energy Modelling Hub[96] but also others that are identified in Canada, to advance open and transparent modeling, data, and assumptions, collaborate closely with utilities and power system operators, and expand modeling expertise and collaboration in Canada.

ii. Regulator collaboration organizations, specifically CAMPUT, to facilitate regulators to collaborate on regulatory approaches that enable enhanced open and transparent data collection and publication.

What can provinces and territories do?

Provincial and territorial governments may need to direct relevant authorities from their respective electricity utilities, system operators, and regulators to engage with the federal government on data identification, provision and standardization.

Utilities and system operators will need to work with their respective provincial or territorial government and federal officials to implement any legal agreements, data security and privacy policies or protocols, and other potential commercial, legal, and technical details to inform their participation.

Regulators may need to oversee and approve the engagement of utility and system operators with an open and transparent data and modeling initiative, and provide resources, data, models, and other inputs for this initiative as needed.

95 Treasury Board Secretariat. 2023. 2023-2026 Data Strategy for the Public Service.
96 Energy Modelling Hub. 2024. Homepage.

RECOMMENDATION 8:
Establish indicators to track national progress

The Council recommends that the federal government establish, or enhance progress trackers and associated measurements to provide a comprehensive, transparent view of the national status and progress toward: (i) emission reductions; (ii) grid reliability; (iii) Indigenous reconciliation; and (iv) affordability and rate parity across Canada. This recommendation should include the aggregation and publication of existing metrics within a single federal web portal. These trackers would also help identify which jurisdictions need assistance on the way to net-zero.

Implementation Details

To implement the recommendation, the federal government should:

A. Identify and leverage existing measurements and trackers in use across federal, sub-national, and Indigenous governments, utilities, system operators, regulators, and civil society organizations.

B. Identify and fill gaps in existing progress trackers to fulfill this recommendation by developing any necessary new measurements and trackers.

C. Include specific measurements for Canadian territories taking into account their unique circumstances and lack of interconnections with the North American continental grid.

D. Explore the concept of the "energy wallet"[97] and publish national, provincial, and territorial estimates and regular updates for an average "energy wallet."

E. Provide a centralized Government of Canada web repository that lists the various trackers and associated measurements for ease of access by Canadians and international investors.

F. Provide stable resources for the implementation and maintenance of the web repository and any new trackers and associated measurements required.

What can provinces and territories do?

Provinces, territories, utilities, system operators, regulators, and Indigenous governments would need to collaborate to provide relevant data for existing and new measurements and trackers, where relevant and appropriate.

Industry and civil society organizations can collaborate with the federal government to streamline the collection and provision of their existing trackers and measurement data within a single federal repository.

97 The "energy wallet" represents the total amount Canadians will spend to receive all the services that energy provides in their daily lives.

ENABLE THE BUILD

ENABLE the Build

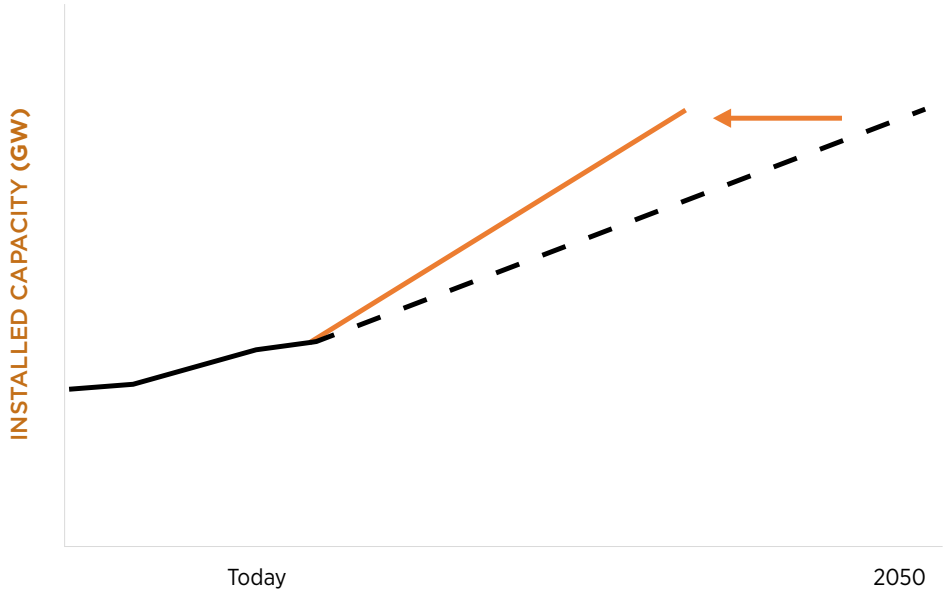
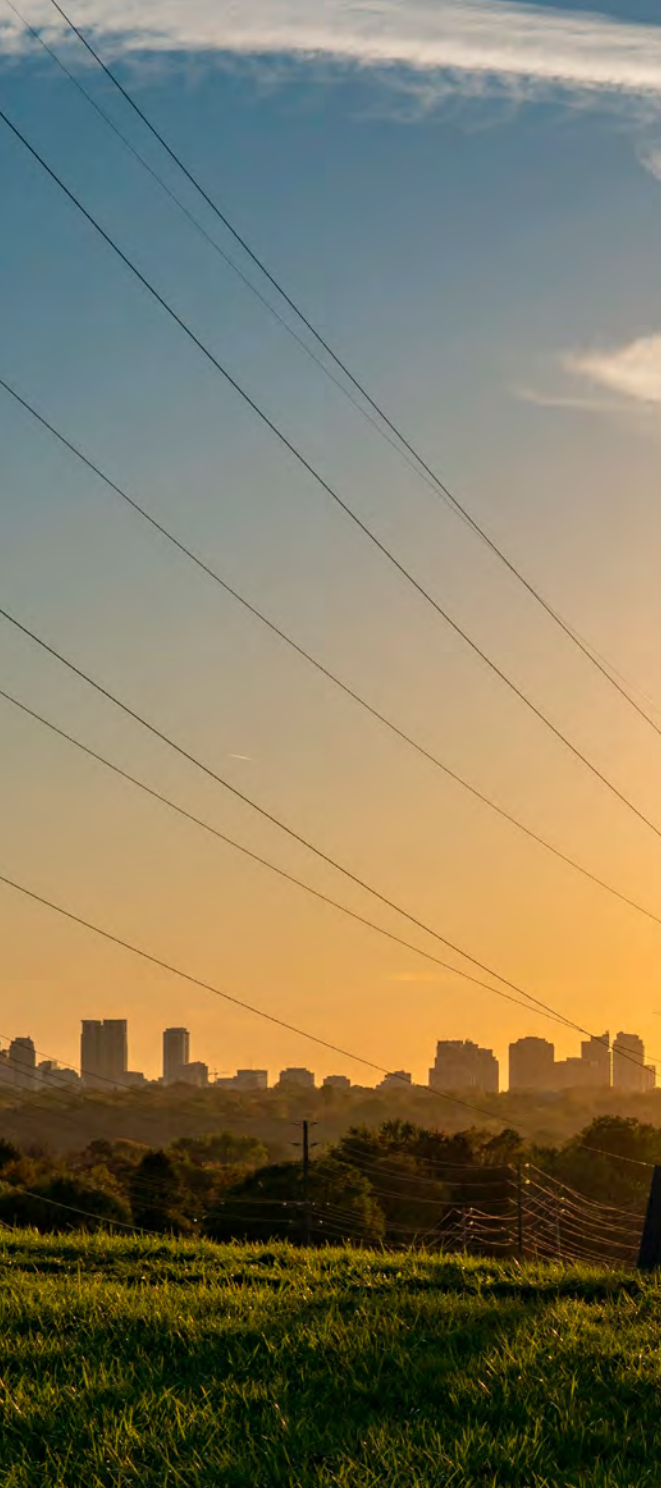


FIGURE 19: ILLUSTRATIVE DIRECTIONAL IMPACT OF 'ENABLE THE BUILD' RECOMMENDATIONS

Removing barriers to build clean electricity projects, including for permitting, capital attraction, and Indigenous participation, is essential for achieving climate targets, while protecting affordability and reliability.

Achieving Canada's net-zero goals will require adding an average of 10 GW of new, clean electricity generation per year.[98] Building that generating capacity, as well as the associated grid and storage infrastructure, will require a dramatic shift in the pace of electricity system expansion.

98 Northey, R. 2023. Expediting Clean Energy Facilities in Canada: A framework for new fast-track permitting. Canadian Climate Institute.



The proliferation of federal, provincial, territorial, and municipal regulatory requirements has made it difficult to obtain project approvals in a timely fashion.

Historically, economic development and environmental protection were often viewed as trade-offs. To build out clean electricity as now required, that trade-off must be turned on its head: to protect the environment from its single greatest threat, global climate change, clean power projects must be built more frequently and faster than ever before.

Put simply, without systemic reform of approval processes for essential clean electricity projects, Canada's ability to achieve its climate goals will be in dire jeopardy.

Building clean electricity projects faster is essential, but insufficient on its own. Canada also needs to develop these projects more inclusively, with particular emphasis on stronger partnerships with Indigenous Nations and communities. Canada has made significant strides on this front in recent years, but more must be done – including by helping guide the way for industry – to ensure that this new wave of growth involves the full participation and consent of Canada's Indigenous peoples.

Finally, this new wave of infrastructure development will require capital and labour, at a time when the global competition for both is stiff, particularly in the clean electricity sector. Canada will need competitive finance, tax, trade, and labour policies to succeed.

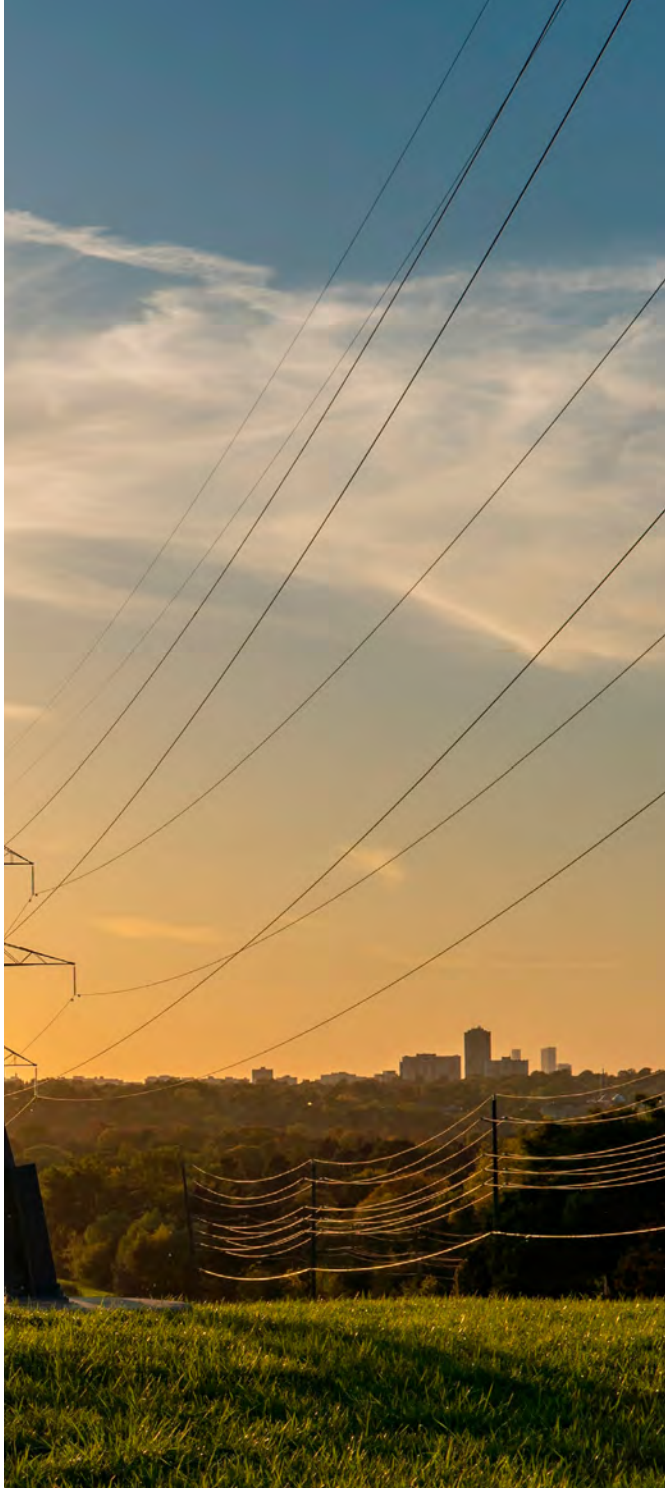
A CHAMPION TO REFORM CLEAN ELECTRICITY APPROVALS

Findings

Governments around the world are changing permitting and approval processes to shorten timelines and attract investment in clean electricity projects. In the United States, for example, the federal government released an action plan to strengthen and accelerate federal permitting and environmental reviews.[99] The plan builds on an earlier measure supporting large, complex, capital-intensive projects that require the approvals of multiple federal agencies.[100]

To reduce overlap and duplication and expedite project reviews, approvals and permitting, Canada's federal government must eliminate areas of redundancy between its departments, and between federal and other levels of government, while providing clear direction on how to respect Indigenous rights. These measures would shorten approval timelines for federal review, particularly for projects where the general nature of potential impacts is already well-defined, and where federal resources may be better directed at targeted areas of concern or at other projects in need of greater scrutiny.

Furthermore, proponents of major clean electricity infrastructure projects often face challenges navigating approval and permitting requirements due to the complexity of the processes, lack of coordination among federal entities, and misalignment of the approval and permitting requirements with Canada's net-zero electricity objectives. The Clean Growth Office, a working group within the Privy Council Office, is currently attempting to address some of these challenges for certain major projects by providing guidance and facilitating support to project proponents within the federal system.



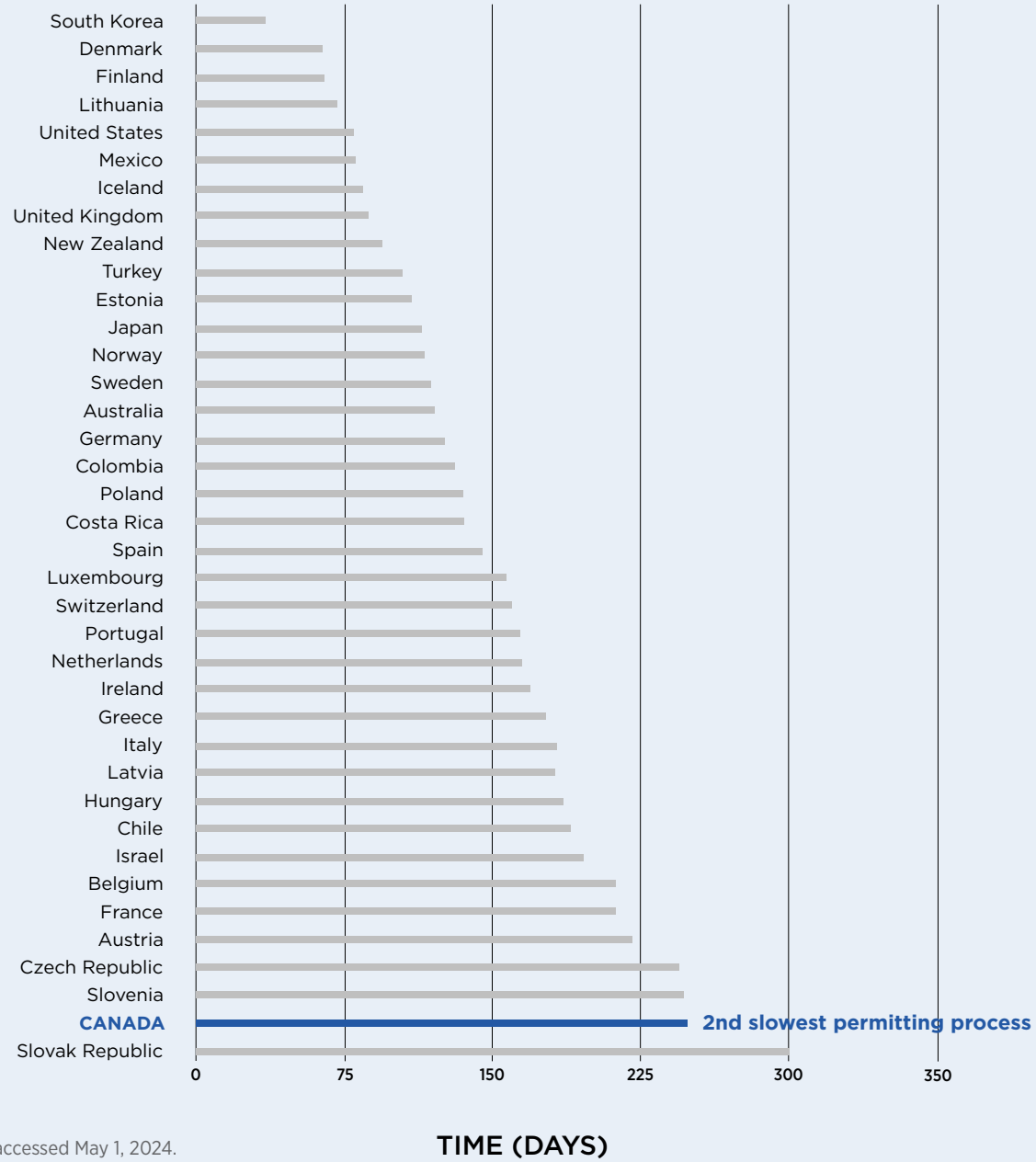
99 The White House. May 22, 2022. FACT SHEET: Biden-Harris Administration Releases Permitting Action Plan to Accelerate and Deliver Infrastructure Projects On Time, On Task, and On Budget.

100 U.S. Department of Energy. FAST-41. Webpage accessed April 24, 2024.

Canada is lagging behind on the pace of permitting. In 2019, the most recent year for which data is available, Canada ranked second worst in the OECD for time required to obtain a general construction permit. And from 2006 to 2019, Canada fell from fourth place to 22nd place in the World Bank's ease of doing business rankings.[101]

Comprehensive Canadian data on timelines for electricity project review, permitting and approvals is not currently available (the information in Figure 2021 is based only on data related to general construction permits). This lack of tracking data for electricity projects only serves to highlight the problem, as well as the need for a more systematic approach – including the measurement of performance improvements over time – to accelerate the pace of clean electricity project development.

FIGURE 20: TIME TO OBTAIN A GENERAL CONSTRUCTION PERMIT, OECD COUNTRIES[102]



101 Public Policy Forum. 2024, March 27. A Hurry-up Offense for Energy Transition and Clean Growth Projects.

102 The World Bank. Dealing with Construction Permits. Webpage accessed May 1, 2024.

RECOMMENDATION 9:
Designate an accountable champion to accelerate electricity project approvals

Building on announcements in the 2024 federal budget, the federal government should formally designate the PCO's Clean Growth Office as a central authority to champion the streamlining of clean electricity project reviews across departments and agencies, while also supporting major clean electricity infrastructure projects that would qualify as Clean Electricity Projects of Canadian Interest (CEPCIs). The central authority should emphasize impartiality, a cross-departmental perspective, and the consideration of all requests for the project-of-interest designation in an unbiased way. The central authority would also coordinate implementation of the Council's recommendations related to accelerating project approvals.

The mandate of this office would be twofold:

1. Champion the review and systemic reform of current federal regulatory and operational policies and frameworks applying to clean electricity projects to eliminate redundancies, define effective and clear timelines and mechanisms, and streamline processes. The Council has made recommendations 10 through 14 to shorten all clean electricity project approval timelines. This office would be responsible, first and foremost, for coordinating their implementation.

2. Develop an objective CEPCI framework to: (i) define CEPCI criteria, focused on impact (e.g. scale of benefit), need (e.g. regulatory complexity), and alignment with provincial or territorial roadmaps (see Recommendation 6 on page 86); and (ii) provide concierge-type support to such projects to facilitate and expedite federal and other approvals for designated CEPCIs.[103]

The Minister of Energy and Natural Resources should be accountable for the progress of the Clean Growth Office in fulfilling its mandate.

103 The Council anticipates that CEPCI projects would involve large, net-zero enabling projects which by their nature involve complex approval processes, for example large-scale hydropower, large-scale transmission including inter-regional lines, and large nuclear facilities, or which merit one-off financial support (see recommendation 19). The services provided to CEPCI projects in no way negate the critical importance of the broader systemic reform that would apply to all projects (e.g. including wind farms, solar farms, storage plants and others), as discussed previously and addressed in recommendations below.

Implementation Details

To implement the systemic reform of current federal regulatory and operational policies and frameworks, the central authority (ideally the Clean Growth Office and the proposed Federal Permitting Coordinator, announced in the 2024 federal budget) would initiate a comprehensive review of regulatory and policy requirements for clean electricity projects.[104]

This review would:

A. Examine the roles and responsibilities of different departments, as well as current approval and review timelines, to identify dependencies, redundancies, and opportunities for optimization;

B. Define appropriate alternate approval and review processes proportionate to the complexity of projects;

C. Identify interdependencies of application requirements and approval and review prerequisites among federal departments and other levels of government; and

D. Work with provinces and territories to publish standards of project approval and review, including acceptable levels of impact and acceptable mitigations to potential impacts for net-zero projects and developments.

The central office would be accountable for meeting measurable project review and approval targets for clean electricity projects, and it would direct specific authorities to coordinate with approving agencies to meet key milestones.

To implement the CEPCI framework, the federal government should define and make publicly available a draft framework by the end of 2024.

The framework would:

E. Define specific criteria for the designation of CEPCIs;

F. Outline the supporting resources that would be made available to such projects, with a view to helping prioritize projects, streamline federal engagement, and engage with responsible federal entities to expedite their reviews;

G. Examine the possibility of CEPCIs being subject to a pre-determination of need and/or reviewed and permitted on an expedited basis;

H. Consider implementing a specific mechanism or clause to safeguard public participation in CEPCI, similar to articles 9 and 18 of the European Union's trans-European energy infrastructure regulation, holding the federal government responsible to communicate key project and approval process details to avoid concerns around "black box" decision-making.

The federal government must also give careful consideration to potential impacts on Indigenous rights and should consult with Indigenous Nations and communities to seek and identify community interests and concerns.

What can provinces and territories do?

This recommendation calls on the federal government to undertake a review of policies and processes, and to introduce a framework to support projects of significance to the whole country. These processes and projects must still abide with jurisdictional authorities and processes as well. The Council encourages provinces and territories to launch assessments of their own review and permitting processes to identify opportunities to support the federal government in streamlining its processes. More specific analysis of inter-governmental collaboration opportunities is provided later in this section to highlight opportunities to optimize processes and minimize duplication (see page 104).

104 This "one stop shop" approach to federal approval/permitting, with a clear mandate to minimize and expedite requirements and timelines, could result in accelerated net-zero project development and improved investor confidence (as done in other jurisdictions such as New York State – see Office of Renewable Energy Siting. 2024. About Us.)

A RISK-BASED APPROACH TO PROJECT REVIEWS

Findings

An over-abundance of caution on federal permitting, reviews and approvals undermines the clean energy transition

Canada's existing regulatory review, approval and permitting systems at all levels of government are not suited to the challenge of meeting climate targets. A business-as-usual approach to reviewing and approving major projects will compromise Canada's ability to meet its climate targets and to capitalize on the economic opportunities associated with the transition to a low-carbon economy.[105]

A risk-based approach to project reviews would have clear benefits. Reviews and approvals focused on critical project- or site-specific risks could reduce timelines and costs for project proponents and investors.

In addition, strategic assessments, as provided for under the Impact Assessment Act (2019) and already introduced in the European Union[106] and other jurisdictions, provide the option for government and regulators to address the impacts of multiple projects through one assessment, which can inform broader policy and save time for future projects.[107] Strategic assessments can streamline the regulatory review process and address key issues such as cumulative impacts and downstream positive impacts.[108]

"The Impact Assessment Agency of Canada should focus attention on matters of federal authority by ensuring that all the federal departments involved in the assessment, review, and permitting of a project work in a coordinated manner and by facilitating joint assessments and reviews with provinces."

WATER POWER CANADA

105 Business Council of Canada. 2023. Accelerating major project approvals gives Canada a competitive advantage.

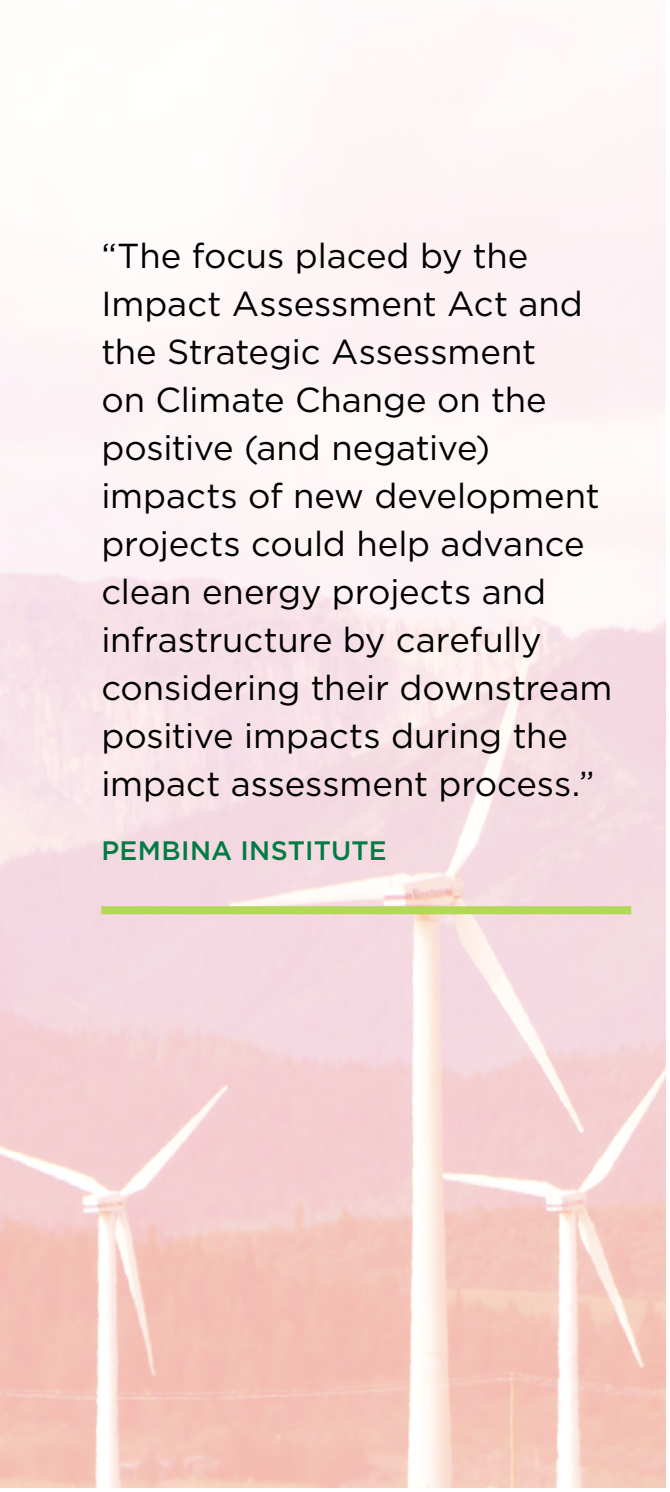
106 EUR-Lex, Access to European Union Law. 2001. Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment.

107 Trottier, C. 2023. Streamlining clean growth project approvals with strategic assessments. Canadian Climate Institute; Impact Assessment Agency. 2024. Policy Framework for Strategic Assessment under the *Impact Assessment Act*

108 Bonnell, S. 2019. Project EA scoping in an SEA context: a case study of offshore oil and gas exploration in Newfoundland and Labrador, Canada. Impact Assessment & Project Appraisal. 38, 2000 (1).
Regional assessments, such as the Regional Assessment of Offshore Wind Development in Nova Scotia, can also inform future impact assessments and decisions for projects that are similar (Impact Assessment Agency of Canada. 2023. Regional Assessment of Offshore Wind Development in Nova Scotia.)

"The focus placed by the Impact Assessment Act and the Strategic Assessment on Climate Change on the positive (and negative) impacts of new development projects could help advance clean energy projects and infrastructure by carefully considering their downstream positive impacts during the impact assessment process."

PEMBINA INSTITUTE



The federal government can shorten the review times allotted to all federal review, approval and permitting processes associated with net-zero projects (including but not limited to those under the Impact Assessment Agency of Canada), where the general nature of potential project impacts is well-established, based on criteria such as location and technology type.[109]

Review time and resources should focus on specific site considerations or potential impacts associated with unique technological or environmental considerations and be subject to rigid maximum approval timeline requirements (in a manner similar to measures implemented recently in California[110]).

The federal government's recent proposal in its 2024 budget to set clearer targets for federal permitting processes is welcome news to the Council and should be swiftly implemented.[111]

109 Northey, R. 2023. Expediting Clean Energy Facilities in Canada: A framework for new fast-track permitting. Canadian Climate Institute.
110 Bell Kearns. August 25, 2022. Is California's AB 205 a Renewable Energy Game Changer?
111 Department of Finance. 2024. Budget 2024.

Federal regulatory review timelines for major electricity projects can exceed 5 years

The table below outlines the federal regulatory review timeline for several major electricity infrastructure projects completed from 2010 to 2016, drawing information from a 2018 study.[112] The same study found that federal project approvals for electricity typically take 49 months for new generation projects and 38 months for transmission projects. This timeline is for the federal review process only, and does not account for provincial and municipal processes, which can be similarly time-consuming. These timelines pre-date the *Impact Assessment Act* (2019).

TABLE 0 1: FEDERAL REGULATORY REVIEW PROJECT TIMELINE FOR MAJOR ELECTRICITY INFRASTRUCTURE PROJECTS [113]

PROJECT	PROJECT TYPE	TIMELINE (months)
Darlington New Nuclear	Generation	68
Muskrat Falls	Generation	64
Labrador-Island Link	Transmission	57
Site C	Generation	41
Darlington Refurbishment	Generation	36
Keeyask Hydro	Generation	35
Maritime Link	Transmission	19

112 Energy Regulation Quarterly. 2018. Federal Energy Project Reviews: Timelines in Practice.
113 Table derived from Public Policy Forum. 2023. Project of the Century. Data from Energy Regulation Quarterly. 2018. Federal Energy Project Reviews: Timelines in Practice.

RECOMMENDATION 10:
Streamline scoping of clean electricity project reviews

The Council recommends that the federal government revise the regulatory review and approval requirements for net-zero electricity projects, adopting a risk-based approach to determining the scope of project reviews that considers critical risks associated with different project types, as well as the risk of clean electricity projects not going ahead in a timely fashion.[114]

Implementation Details

The federal government should:

A. Formalize the definition of a net-zero-enabling electricity project (e.g. solar, wind, nuclear, hydro, transmission, storage) and, for those projects that meet the net-zero definition, identify:

i. Project-specific critical risks by known project type, on a region-specific basis where relevant;

ii. Minimum permitting, review and approval requirements for each identified project-specific critical risk; and

iii. Mitigation requirements consistent with best practices for non-critical project risks and well-understood impacts that are not subject to federal permitting, review, and approval.

B. Limit the scope of permitting, review and approval processes required for net-zero electricity projects to critical project- or site-specific risks without known or widely accepted mitigation strategies.

C. Account for the risk of not completing a given project in a timely fashion (e.g. risks for emissions and reliability).

D. Follow through and create accountability on the 2024 federal budget announcements to reduce, publish and enforce federal review and permitting timelines, and establish maximum timelines for net-zero-enabling electricity projects where they do not already exist.

E. Work with provincial, territorial, municipal and Indigenous governments to encourage adoption of similar reforms.

What can provinces and territories do?

Streamlining scoping does not apply exclusively to the federal government. Provinces, territories and municipalities can examine their own processes, as well as identify efficiency and coordination opportunities.

114 The Council notes that this should not compromise Indigenous rights nor jeopardize reasonable public participation.

RECOMMENDATION 11:
Move to a compliance-based approvals framework where possible

The Council recommends that the federal government develop and adopt a compliance-based approach to streamline the implementation of low-risk net-zero electricity projects by decreasing the number of advance approvals required, and instead relying on enforcement mechanisms to audit and confirm the compliance of the projects with established criteria. Development of this approach should be carried out by the central authority recommended in Recommendation 9 (see page 97).

Implementation Details

The federal government should establish a framework to:

A. Identify established technologies or project types that have known risks and mitigation solutions.

B. Publish clear directives with respect to: i) data and documentation requirements; ii) risk assessment criteria; iii) known mitigation options required for specific risks; and iv) penalties for non-compliance.

C. Enable eligible project proponents to undertake their own risk assessment against the criteria and implement the appropriate mitigation option without prior approval. Project proponents would need to notify the specific agency that they have done so, allowing the agency or department to audit compliance of the project proponents' risk assessments and the implementation of mitigation options for the identified risks.

Project proponents would be eligible to engage in this process if they demonstrate that they have the capacity to assess risks and implement mitigation options and have not previously been found substantively out of compliance.

What can provinces and territories do?

Moving to a compliance-based model can be just as important for provincial and territorial governments, given their significant roles in project permitting and approvals. Provinces and territories can assess their own processes with a view to adopting more compliance-based frameworks wherever relevant. Additionally, they can work with the federal government to align processes, thereby enabling greater use of compliance-based frameworks by all parties.

"Where appropriate, provincial regulatory processes and approvals should be accepted to avoid unnecessary duplication. If approvals at both provincial and federal levels are required, existing provincial processes should be considered as the appropriate mechanism to obtain the necessary information to inform both levels of approval."

SASKPOWER AND SASKATCHEWAN CROWN INVESTMENTS CORPORATION

PROACTIVELY ELIMINATING DUPLICATION AND LEVERAGING CROWN LANDS

Findings

Federal government assessments must be circumscribed to the issues that fall under federal jurisdiction

Duplicative environmental assessment and permitting processes between orders of government have grown common in Canadian governance.

The approves of the federal government's reaffirmation of the principle "one project, one review" in the 2024 federal budget, with proposed actions such as the amendment of the Impact Assessment Act (2019) and enhanced coordination across orders of government.[115]

As the Supreme Court of Canada's 2023 decision on the Impact Assessment Act has ruled, the federal government must refocus its impact analyses for "designated projects" on the issues that are central to the federal government's competencies. Acknowledging that the government has proposed actions to respond to the Court's decision in the 2024 federal budget, the Council has not made additional recommendations in that regard.

Responding to the Supreme Court decision, while important, is insufficient to address all the concerns with federal oversight. Legislation that reflects federal areas of jurisdiction, such as the Fisheries Act (1985) and Migratory Birds Convention Act (2022), applies rigorous requirements on electricity project development. Overlaps exist between federal and provincial authority and related processes that seek to protect wildlife and their habitat.[116] As a result, many types of projects, including vital transmission and hydroelectric projects, can suffer delays of several years or more – meaning years of additional emissions not being offset by clean electricity, in addition to added cost and reliability concerns.

115 Department of Finance. 2024. Budget 2024.

116 In one case, as noted in the Migratory Birds Regulations (2022), strict respect of a requirement focused on the pileated woodpecker — a non-endangered, non-migratory bird species — adds a minimum of 36 months of delays to any project that would need to fell even a single tree in which that common bird species has a nest. The Council recognizes the need for an updated approach that accounts for biodiversity and conservation objectives without jeopardizing or unduly delaying critical projects to reach Canada's net-zero goals on time. For example, DFO's regulatory decision-making on conservation of fish and fish habitat is a means through which it supports federal commitments on the Global Biodiversity Framework (Task Force on Sustainable Tidal Energy Development in the Bay of Fundy. 2024. Final Report).

Opportunities to improve efficiencies are available. The Fisheries Act (1985) already contains a provision allowing for Equivalency Mechanisms (section 4.1), yet these are rarely used. The Impact Assessment Act (2019) eliminated a similar provision in the 2012 version of the Canadian Environmental Assessment Act that allowed the Governor in Council to exempt a project from the federal process if the provincial assessment was deemed equivalent.

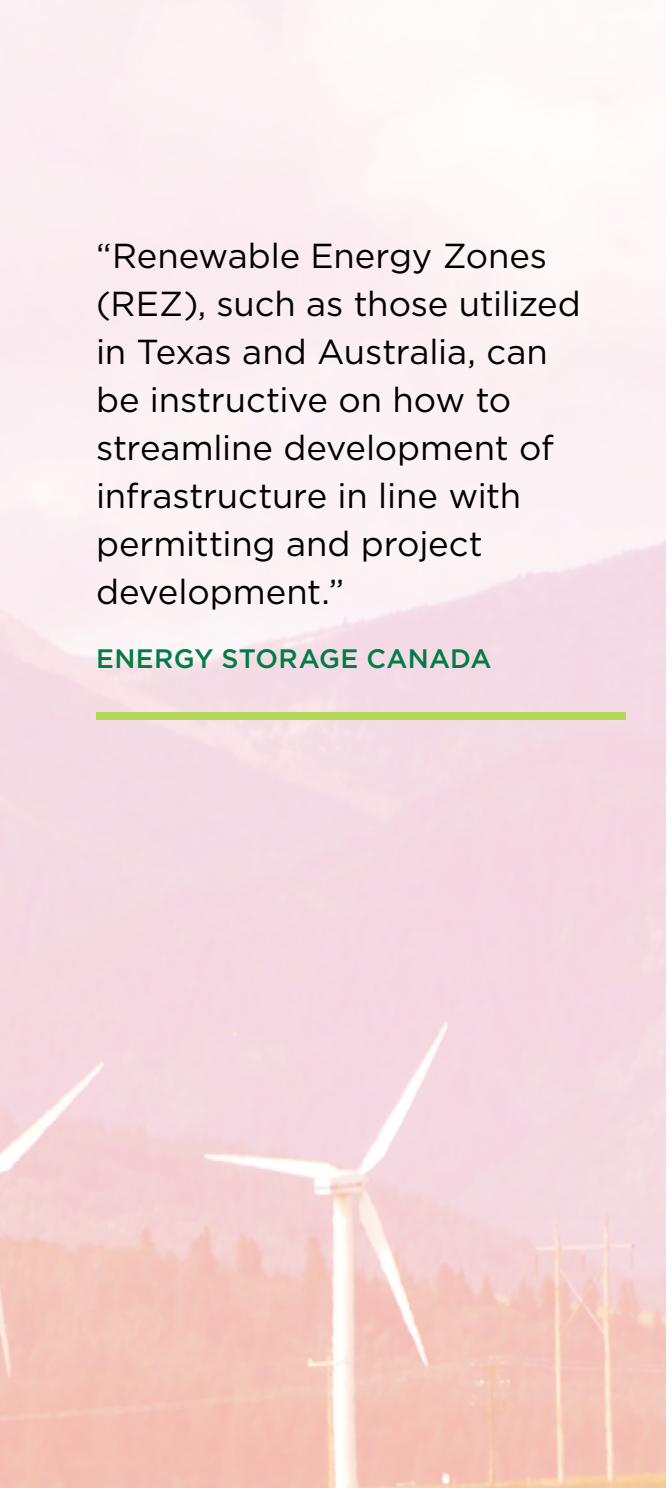
To mitigate these overlapping and sometimes conflicting responsibilities, the Council recommends that the federal government pivot from the role of frontline protection to one of federal backstop in its environmental assessment processes. This pivot should be viewed within the broader context of the federal government seeking to balance its historic concern for local environmental protection with a newer and more urgent concern for global climate change. By harnessing equivalency mechanisms, the federal government can limit its expertise to intervene primarily in cases where provincial or territorial mechanisms may be insufficient.

"Working with municipalities to designate pre-approved areas for development would streamline the approval of future projects."

PEMBINA INSTITUTE

"Renewable Energy Zones (REZ), such as those utilized in Texas and Australia, can be instructive on how to streamline development of infrastructure in line with permitting and project development."

ENERGY STORAGE CANADA



Leverage Crown assets to incentivize development of clean electricity projects

In addition to equivalency mechanisms, the federal government can also leverage its resources to incentivize development, investments, and Indigenous participation. Federal Crown lands, for example, offer an opportunity for the federal government to identify and pre-approve designated zones for the development of electricity infrastructure projects for technologies such as wind, solar, battery storage, and transmission infrastructure. Designating Crown land for development can reduce development risk, reduce upfront costs, allow for early identification of Indigenous rights holders, and provide more certainty for project timelines. The 2024 federal budget recently proposed measures to develop federal land for housing; which introduces a model for similar action on much-needed electricity infrastructure.[117]

Crown land designation can facilitate building ahead of demand – for example, constructing transmission systems capable of handling substantial capacity additions. This can provide developers with greater certainty regarding the financial viability of adding wind and solar capacity.[118]

Outside Canada, energy hubs and renewable energy zones have been legislated in international jurisdictions to advance electricity development in a coordinated and collaborative way to achieve economic, social, and environmental outcomes. For instance, sub-national governments in the United States and Australia, including New York[119], Texas[120] and Queensland[121] have identified "Renewable Energy Zones" to help coordinate development of clean energy infrastructure in areas of high potential, maximizing benefits for local communities. In addition, efforts in Texas have connected wind resources from West Texas and the Panhandle to more populated parts of the state, facilitated by the pre-development of high-voltage transmission. Europe's large and successful offshore wind industry benefited from similar approaches, such as Germany's use of Exclusive Economic Zones.[122]

Although not formally designated, several Canadian provinces, including Newfoundland and Labrador, New Brunswick, British Columbia, and Ontario, have policies to promote the use of Crown land for renewable resources, which is generally underpinned by land-use planning criteria.[123]

117 Department of Finance. 2024. Budget 2024.
118 Dunsky Energy + Climate Advisors and Electricity Canada. 2023. Build Things Faster.
119 State of New York and New York State Energy Research and Development Authority. 2020. Accelerated RE Growth and Community Benefit Act; Arnold, J. and B. Marisa. 2023. Permitting reform for clean energy projects in New York and California. Canadian Climate Institute.
120 Power Up Texas. 2022. Transmission and CREZ Fact Sheet.
121 Readfearn, G. July 10, 2023. Queensland identifies 'renewable energy zones' as part of $62bn 'super grid' plan.
122 Federal Maritime and Hydrographic Agency (Germany). 2024. Offshore.
123 Government of British Columbia. 2021. Land use – clean energy.; Government of Ontario. 2021. Renewable energy on Crown land policy; Government of New Brunswick. 2024. Crown lands – Wind Exploration Licence.

Development of Crown Lands in Newfoundland and Labrador

In July 2022, the Government of Newfoundland and Labrador initiated a program to use Crown lands for wind energy projects in a manner that "ensures the greatest long-term benefits for residents of the province."

The first phase of this multi-stage program has allowed proponents to nominate Crown lands for development. Thirty-one land nominations were received and reviewed to determine which sites would be made available for development. Phase two brought in a formal procurement process, in which interested parties submitted bids to develop wind energy projects on pre-approved Crown lands.

To ensure the safe and reliable operation of the province's electricity system, Newfoundland and Labrador Hydro supported the government in its Crown-land nomination and bid process for wind energy projects. To date, four bids from four separate companies have received wind application recommendation letters and now have exclusive rights to pursue project development through the provincial process.[124] Prior to the final awarding of development permits on Crown land, an environmental assessment will be required for all wind projects larger than one megawatt in scale.

124 Government of Newfoundland and Labrador. August 30, 2023. Minister Parsons Announces Companies Advancing in Wind-Hydrogen Process.

RECOMMENDATION 12:
Conclude equivalency agreements to limit duplication with provinces

The Council recommends that the federal government proactively seek to develop equivalency agreements for the permitting, review and approval of net-zero electricity projects where federal statute and regulation duplicates provincial mechanisms.

Implementation Details

To implement this recommendation, the federal government should adopt changes that:

A. Define equivalency mechanisms as those that allow the federal authority to deem when provincial processes are broadly equivalent to federal standards; and

B. Require relevant authorities, including ECCC, the DFO, and the Impact Assessment Agency of Canada, to proactively seek to negotiate such equivalency agreements with interested provinces, in the interest of eliminating unnecessary costs, delays, and uncertainties in clean electricity infrastructure project development, while ensuring adequate wildlife protections.

What can provinces do?

While the federal government can help to reduce duplication, provinces have an important role as well in examining their own review and permitting processes. This would be conducted in the spirit of the above recommendation, with the intention of eliminating unnecessary internal duplications, streamlining processes, and identifying opportunities for alignment with federal regulations.

RECOMMENDATION 13:
Proactively develop federal Crown lands

The Council recommends that the federal government establish a mechanism to proactively identify federal Crown lands and conduct the relevant assessments for electricity infrastructure projects to expedite future development on these properties, reducing both time and risk for proponents of clean power projects.

Implementation Details

To develop such a mechanism, the federal government should explore a framework that:

A. Examines federal Crown lands to identify criteria and types of lands subject for development;

B. Develop a process to identify the types of feasible projects, viable sites, mechanisms to invite project development proposals, and initiate projects; and

C. Must include:

a. Measures to engage and consult with impacted Indigenous Nations and communities.

b. Processes for consultation with provincial and territorial governments, municipalities, utilities, project developers, and significant other parties to confirm alignment.

What can provinces and territories do?

The Council encourages provincial and territorial governments to engage the federal government to initiate consultation, planning, construction, and commissioning processes for the development of energy hubs, working with provincial and territorial planners, municipal governments, local communities, and Indigenous Nations and communities.

"Communities, especially Indigenous communities, are much more likely to support electricity infrastructure projects when they can participate in them as partners."

ELECTRICITY CANADA

CLARIFYING INDIGENOUS CONSULTATION AND ENGAGEMENT

Findings

Understanding the origin and framework of Indigenous rights will enable expedited energy project development by ensuring the early inclusion of Indigenous perspectives, alleviating project opposition through increased communications, and maximizing the opportunities for economic reconciliation.

Indigenous rights were enshrined in the *Constitution Act* revisions in 1982, which recognized and affirmed "the existing aboriginal and treaty rights" of Canada's Indigenous peoples. Establishing what these rights encompass and how to address constitutional protection took a longer time and can now be found in a growing set of court decisions.

A three-part test, first articulated in a series of Supreme Court of Canada rulings in 2004, was established to determine when Indigenous rights exist and how these rights are to be balanced with the need for development.[125] This includes the creation of a spectrum of rights and a tool to evaluate the primacy of rights over the need for development. In short, the constitutional protection and the Supreme Court decisions require conversations with Indigenous Nations and communities to understand what rights are going to be impacted and project modifications to minimize the potential impacts to those rights.

The constitutional status of Indigenous rights means that respecting them is not optional, and doing so correctly is part of the critical path necessary for a successful energy transition. Courts have delayed major infrastructure projects over the years to ensure that tangible consideration has been given to the impacts on Indigenous rights and that meaningful modification of project plans are made to minimize these impacts.

Despite this, project proponents often lack ready access to a clear articulation of the Duty to Consult, including who is entitled to these processes for project development purposes. Meanwhile, Indigenous Nations and communities are often provided with insufficient definition of what the projects entail, or the details are provided when changes to projects would be cost-prohibitive.

125 CG Law. The Duty To Consult — Key Principles From Haida And Beyond. Webpage accessed April 26, 2024. CanLII. 2004. Haida Nation v. British Columbia (Minister of Forests). Supreme Court of Canada.

Greater clarity on how the federal government determines which entities need to be consulted and where they sit on the spectrum of rights will serve to build better relationships, pursue national relationship reconciliation goals, and create the right opportunities for economic reconciliation.

While Indigenous rights have established parameters for evaluation and respect in the Canadian constitution and in jurisprudence, recent discussions have turned to the implementation of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)[126] in Canada. The distinctions between the current legal regime and the proposed revisions are often conflated, resulting in misunderstandings regarding the best way forward. Specifically, UNDRIP calls for the protection of Indigenous cultures, language, and autonomy over lands and resources, requiring the free, prior, and informed consent (FPIC) of Indigenous Nations and communities before these rights are impacted. Federal legislation is still looking at developing a plan to implement UNDRIP in Canada and working with Indigenous Nations[127] to do so. While the necessary legislative reforms will take time, it would be beneficial in the near term to have some of the key definitions around FPIC articulated by the federal government.

A clearer understanding of constitutional rights early in the development process will allow developers to build relationships with Indigenous Nations and communities from the very start of a project, leading to better inclusion of Indigenous perspectives, greater respect for Indigenous rights, and fewer delays due to late-stage engagement.

> "Excluding First Nations from meaningful participation in regional planning and decision-making creates risks for projects, erodes Canada's investment attractiveness, and is out of step with the federal government's commitment to ensure federal laws are consistent with the principles of UNDRIP."
>
> **SASKATCHEWAN FIRST NATIONS NATURAL RESOURCE CENTRE OF EXCELLENCE**

126 UNDRIP received Royal Assent on June 21, 2021 and requires the federal government, in consultation and cooperation with Indigenous Peoples, to take all measures necessary to ensure federal laws are consistent with UNDRIP Declaration, develop and carry out an action plan to achieve related objectives, and report on annual progress.

127 Section 35 of the Constitution Act states: 35. (1) The existing aboriginal and treaty rights of the aboriginal peoples of Canada are hereby recognized and affirmed. (2) In this Act, "aboriginal peoples of Canada" includes the Indian, Inuit and Métis peoples of Canada.

RECOMMENDATION 14:
Enhance clarity and awareness of expectations for Indigenous consultations

The Council recommends that the federal government develop and publish resources to support project proponents, utilities, and other energy sector participants in meeting the requirements to consult with appropriate rights holders. The resources must include:

1. Public clarity on how Aboriginal Rights Holders are identified and the process by which proponents can identify rights holders early to ensure pre-consultation engagement can take place;
2. A clear description of the spectrum of engagement and consultation, along with information regarding what types of project changes qualify as accommodations; and.
3. The process by which developers and proponents can apply to have the procedural aspects of the Duty to Consult delegated to them in order to expedite the consultation process and reduce their reliance on government resources.

Implementation Details

The Council recommends that the federal government:

A. Develop a plain-language resource describing the constitutionally protected Aboriginal Rights found in S. 35 of the Constitution Act, 1982, that explains in accessible terms the Duty to Consult test and the spectrum of interest holders to rights holders, and also clarifies which actions constitute accommodations and how (and when) a developer or proponent can receive a delegation of the procedural aspects of consultation from the Crown;

B. Share this information through an awareness campaign for business developers, utilities, and all other energy sector participants; and

C. Provide clarity regarding changes to constitutionally protected rights through the implementation of UNDRIP, including the development of legislative definitions to support the interpretation of the UNDRIP with a particular focus on defining FPIC). [128]

What can provinces and territories do?

Provinces and territories can support the clarity and awareness of Indigenous consultations by developing and disseminating educational resources tailored to local contexts. They can also facilitate engagement by providing platforms for pre-consultation and streamlined processes for identifying rights holders, thereby ensuring a more effective and inclusive consultation framework.

128 While social discourse has recently spent a great deal of time examining consent, this factor is complicated when you consider multiple treaty signatories over vast areas of land, overlapping treaty and territorial claims, and whether for the purposes of development a lack of object meets the requisite levels of consent. This call for clarity presumes that consent will be required by Treaty rights holders and those who have asserted Aboriginal Title or Aboriginal Rights claims over a particular area, though this may not necessarily be the case.

PAVING THE WAY FOR CAPITAL AND LABOUR

Findings

The transition's investment needs are significant, and the competition to attract capital and labour to enable the growth of its clean electricity systems and remain a world leader is steep and growing

The cost to decarbonize, expand, upgrade, and improve the resiliency of the electricity sector in the transition to net zero is estimated to be around $1.4 trillion between now and 2050 (as noted in Box 7 on page 55). Attracting the capital investments required will be critical for Canada's success.

The electricity sector faces intense competition with other nations jurisdictions that are providing unprecedented incentives and fast-tracked approvals for investment in clean electricity, particularly the United States, the European Union and China.[129] And the impact of global competition is not just financial; it includes competition for labour and the supply chain.

To be effective, Canada's existing finance, tax, trade, and labour policy measures must adjust to this new marketplace. The Council's interim report urged the federal government to build on other measures to address workforce and supply chain issues for the clean economy more broadly, and to develop a dedicated initiative focused on addressing the electricity sector's labour and supply chain challenges. The Council reiterates this call, highlighting the significance of these challenges for meeting Canada's net-zero electricity goals.

Securing skilled labour will be fundamental to the success of the electricity system build-out, and Canada is competing with other jurisdictions to attract the necessary workers. Nearly 28,000 new employees will be needed nationwide by 2028, equivalent to a quarter of the current electricity sector workforce and exacerbated by the need to both replace retiring workers and meet expanding growing demand.[130] These labour requirements cannot be properly addressed without enabling government policies and funding.

"Canadian and global investments will create significant global demand for workers with skills and experience in electrification in all of its applications … Without taking steps to address this shortage, Canada will be unable to meet growing needs for workers in this sector."

CANADIAN LABOUR CONGRESS

129 Government of Canada. 2023. Budget 2023, Chapter 3: Building an Economy That Works for All Canadians.
130 Electricity Human Resources Canada. 2023. Electricity in Demand: Labour Market Insights, 2023-2028.

Supply Chain Shortage Implications

The market for transmission transformers has seen a drastic increase in both procurement lead times and prices over the past three years. For example, SaskPower faced a tripling of timelines for expected delivery of Neutral Grounding Transformers in the fall of 2023, as well as a price increase of more than 50 percent over the contract they had negotiated in 2020. The utility encountered even higher costs for more complex units. These delays in the production and supply of critical equipment reduce the capacity of the utility to accommodate load increases associated with the transition, indicating a need for federal manufacturing and project development support.

Policy certainty is crucial for project proponents, who need clear information regarding the availability, quantity and timing of financial supports (See recommendations 1, 2 and 3 on pages 77–79). The measures must address the full spectrum of projects required for the transition, at a scale and pace commensurate with the necessary growth in investments.

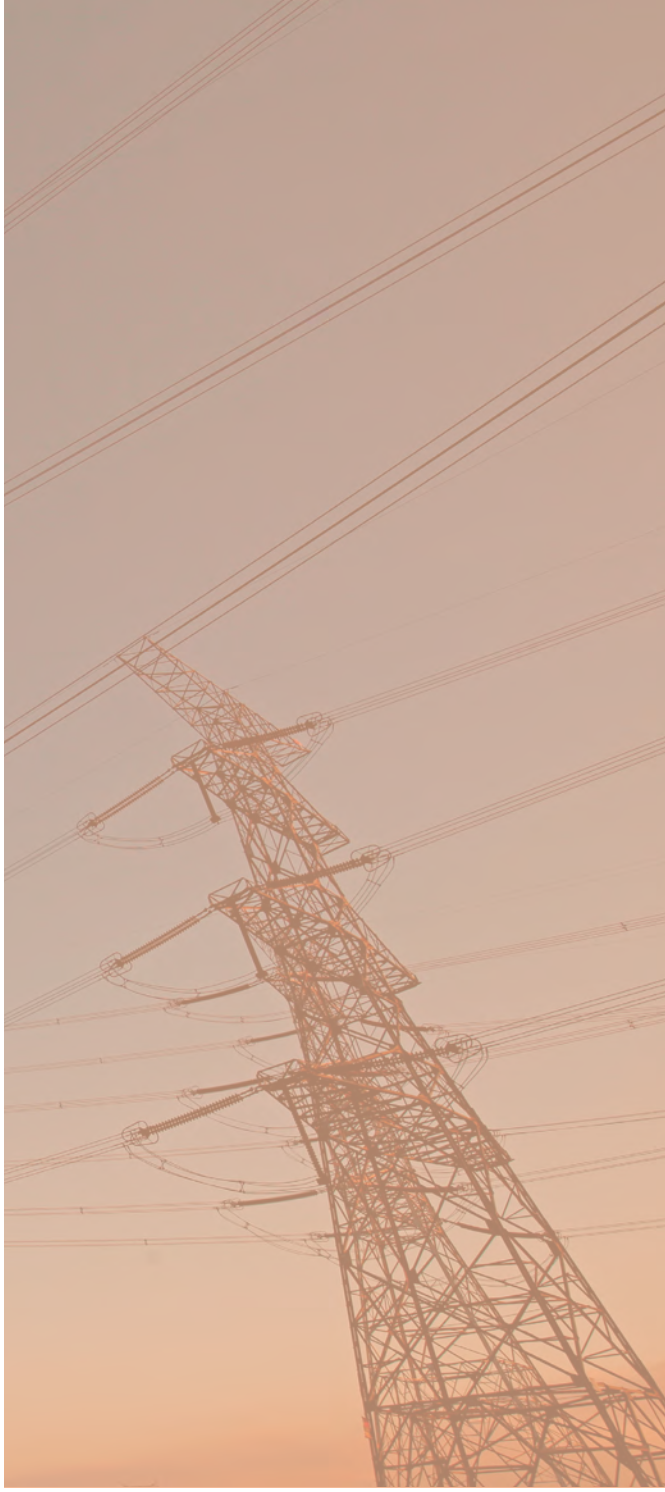
Project costs are at risk of increasing under the proposed Excessive Interest and Financing Expenses (EIFEL) rules[131] and the pending expiry date for the accelerated rates of depreciation for electricity property under the Capital Cost Allowance (CCA).[132]

Other key policies and mechanisms, such as carbon contracts-for-differences (CCfDs) offered through the Canada Growth Fund[133], and the green and transition taxonomy[134] being developed by the Department of Finance, are also important for incentivizing long-term investments in clean energy.

131 The proposed rules would disallow taxpaying entities from deducting interest and other expenses.
132 Canada Revenue Agency. Accelerated investment incentive.
133 CCfDs can be used to guarantee the future price of carbon, offset credits, and/or other commodity prices such as electricity. Long-term contracts in provincial and territorial markets are seldom used as the market rules, and electricity systems do not often support them.
134 The Sustainable Finance Action Council provided recommendations to the Department of Finance on such a taxonomy in February 2023. (Sustainable Finance Action Council. 2023. Taxonomy Roadmap Report.)

Aligning trade policies with net-zero goals while ensuring respect for human rights and other vital considerations is also important. For example, anti-dumping tariffs have forced some utilities to purchase transformers and other equipment from higher priced vendors when domestic products are unavailable, rather than turning to known and trusted foreign vendors that provide more cost-effective equipment.

The federal government has other mechanisms at its disposal to further support the transition. Codes and standards can level the playing field for technology vendors, developers, and service providers. Greater harmonization of standards can promote global interoperability, facilitate trade, and encourage cross-border investment in clean electricity infrastructure.[135] [136] The reactive nature of the Canadian Electrical Code (CEC), while safety-focused, contributes to the adoption of non-harmonized codes and standards across Canada. Furthermore, its lack of alignment with net-zero goals limits the pace, scale, and benefits of emerging and existing net-zero-aligned electricity technologies and construction standards projects.



135 IEA. 2023. Co-operation across borders is key to building interconnected power systems of the future.
136 Liao, D. 2021. Every Standard Counts – How Standardization Boosts the Canadian Economy. Ottawa: Standards Council of Canada.

RECOMMENDATION 15:
Align financial, tax, labour and trade policies with net-zero

The Council recommends that the federal government review and revise its finance, tax, trade and labour policy measures in a timely manner to reduce investment costs and risks, attract capital at the pace needed, and improve competitiveness. It can do so by: (i) aligning measures with net-zero goals and priorities in terms of breadth of coverage, scale, timing, and proponent eligibility; (ii) supporting labour planning, training, and allocation; (iii) considering the evolving economic, technological, and market landscape; and (iv) minimizing duplication and funding gaps. Specific examples that are known impediments to power sector investment that must be urgently addressed, including CCA rates and EIFEL rules, are outlined below.

Implementation Details

The government should:

A. Expediently amend CCA Classes 43.1 and 43.2 of Schedule II to the Income Tax Regulations, which allow companies to reduce their taxable income by a greater proportion of their investment, in order to: (i) extend until 2035 the (50 percent) accelerated rates and the (100 percent) first-year enhanced allowances;, and (ii) expand the list of systems that qualify as "clean energy property" to include other equipment important to the energy transition.

B. Expand the list of clean energy projects beyond CCA Class 43.1 and 43.2 projects to include projects whose costs are eligible for the Canadian renewable and conservation expense under the Income Tax Act, so that they may accrue the tax deduction and flow-through share benefits.

C. Expediently amend the proposed EIFEL rule[137] in Bill 59[138] to exclude all tax-paying clean energy entities and their holding companies and clean energy investments and allow them to reduce their taxable income by 100 percent of their interest and other expenses.

D. Review and revise the list of goods subject to the anti-dumping and countervailing measures rules under the *Special Import Measures Act* (SIMA)[139] to exclude those that are critical to the energy transition.

E. Encourage provincial and territorial governments to explore long-term contracts (e.g. power purchase agreements) as part of their resource planning processes to provide investment certainty.

F. Build on the work of the Sustainable Finance Action Council and the commitment in the 2023 Fall Economic Statement and the 2024 federal budget to develop a taxonomy framework that will provide a standardized approach for benchmarking "green" and "transition" economic activities aligned with 2050 net-zero objectives.

137 Department of Finance. 2022. Amendments to the Income Tax Act
138 Parliament of Canada. 2023. Bill 59 - An Act to implement certain provisions of the fall economic statement tabled in Parliament on November 21, 2023 and certain provisions of the budget tabled in Parliament on March 28, 2023.
139 Canada Border Services Agency. 2024. Anti-dumping and countervailing

G. Expand eligibility under the federal CCfD program and Clean Growth Fund as promised in the 2024 federal budget, as well as the CIB. Project eligibility and funding should be expanded to better support the full suite of energy transition projects, including distribution investments and DSM solutions. Allocating funds through the CGF is a prudent, low-cost and risk-averse mechanism to incentivize new technologies. The contracts for differences awarded through the CGF should seek to maintain a healthy balance between investment returns and supporting new projects coming to market, recognizing that the investment return adds to project costs.

H. Review and revise labour market measures to support labour planning, training, retention, and allocation. This should include the following actions:

i. In accordance with other Council recommendations regarding data and modelling, support national, provincial, territorial, and regional planning by collecting and disseminating labour market data and identifying ways to include labour unions in planning for major federally involved projects;

ii. Collaborate with industry, unions, and academic institutions on training, updated curricula, skill development, and certification;

iii. Expand programming, investments and equitable access for Indigenous Peoples and others, for federal training programs such as the Union Training and Innovation Program and Apprenticeship Services Program, and collaborate with key parties on other training and education programs; and

iv. Explore implementation of federal and regional Project Labour Agreements and Community Benefit Agreements to increase investor certainty, labour availability, and local economic benefits.

What can provinces and territories do?

Provinces and territories and other key stakeholders are vital for enabling the federal government's review of its financial, tax and labour policies. For example, regional authorities can engage in the development of Canada's green and transition taxonomy implementation plan and the rollout of the framework. Similarly, provincial and territorial energy agencies can incorporate power purchase agreements into their resource planning and system operations.

Provinces, territories, education and training agencies, and other stakeholders can also collaborate with the federal government to determine their specific needs and how best to address them.

RECOMMENDATION 16:
Establish a one-stop shop for federal financial support

The Council recommends that the federal government consolidate and enhance its financial information services into a single "one-stop shop," focused on providing project proponents of all sizes with relevant information and concierge advisory services to support and de-risk clean energy projects (including DSM and grid modernization).

Implementation Details

The government should:

A. Consolidate the Clean Growth Hub (CGH), the Industry Decarbonization group, and other federal financial information services into a single one-stop shop for financial supports. This one-stop shop should include a web-based information clearing house for information, resources and tools, and it should offer advisory (concierge) services on a one-on-one basis to guide and support project proponent's search and applications.

B. Locate the service in a federal government agency engaged in funding and permitting with strong ties to other key agencies, and/or in an agency where key funds originate.

C. Revise the information and services offered to enhance and prioritize services for significant projects, and expand outreach and service depth for a broader spectrum of projects, including energy efficiency, DSM, and electricity transmission and distribution projects.

D. Develop and regularly update a single, comprehensive, tracking mechanism for energy financing to ensure the one-stop shop has access to current federal, provincial, and territorial financial programming information across the country.

E. Conduct a thorough review (with follow-up annual reviews and reporting) of federal measures in energy financing with respect to breadth of coverage, overlaps and gaps, financial value, time frames, and other key variables.

F. Develop and implement a communications plan that clearly identifies the one-stop shop as the single portal for proponents to access financial support information and services, and includes an outreach program for targeted potential proponents.

G. Provide clear direction on priorities and a formalized process for inter-departmental collaboration and program support.

What can provinces and territories do?

Provinces and territories can support the federal government in implementing this initiative by establishing partnerships with this new office and providing regular input on their own financial measures, helping to enhance the accuracy of the office's services with respect to financial measure coverage.

RECOMMENDATION 17:
Harmonize electrical codes and standards

The federal government should fund a collaborative advisory body, working with the Standards Council of Canada and related standard-setting bodies (such as the Canadian Standards Association), to identify and draft minimum and aspirational codes and standards for anticipated electricity grid technologies that could be deployed in Canada, in order to (i) inform and assist Canadian standard-setting bodies to develop and adopt relevant codes and standards; and (ii) inform Canada's work to align Canadian codes and standards with international bodies. The federal government should also evaluate governance mechanisms to speed up the development and adoption of codes and standards to enable the safe and reliable deployment of climate-resilient, innovative, and net-zero-aligned grid technologies.

Implementation Details

For the federal government, implementing this recommendation should include:

A. Collaborating with the Standards Council of Canada and related standards bodies to establish this new office and ensure that it is comprised of dedicated representatives from federal, provincial, and territorial governments, electric utilities, system operators, and standard setting bodies;

B. Investigating a governance mechanism of national codes and standard setting for the Canada Electrical Code, in line with similar national efforts (such as the Canadian Board for Harmonized Construction Codes);

C. Introducing five-year, renewable mandates requiring a systems approach rather than a product approach to identify and establish draft model codes and standards and other technical requirements for electrical equipment and installations to ensure safety, climate resiliency, and interoperability of new distributed energy technologies;

D. Coordinating and feeding into Canada's national strategic engagement with international standards setting bodies and processes (e.g. the Institute of Electrical and Electronics Engineers) to represent Canada's interests in international standard development and harmonization efforts;

E. Identifying financial resources required to support codes and standard-setting processes in codes and standards setting organizations;

F. Taking a future orientation regarding the incorporation of new and evolving technologies into electricity grids;

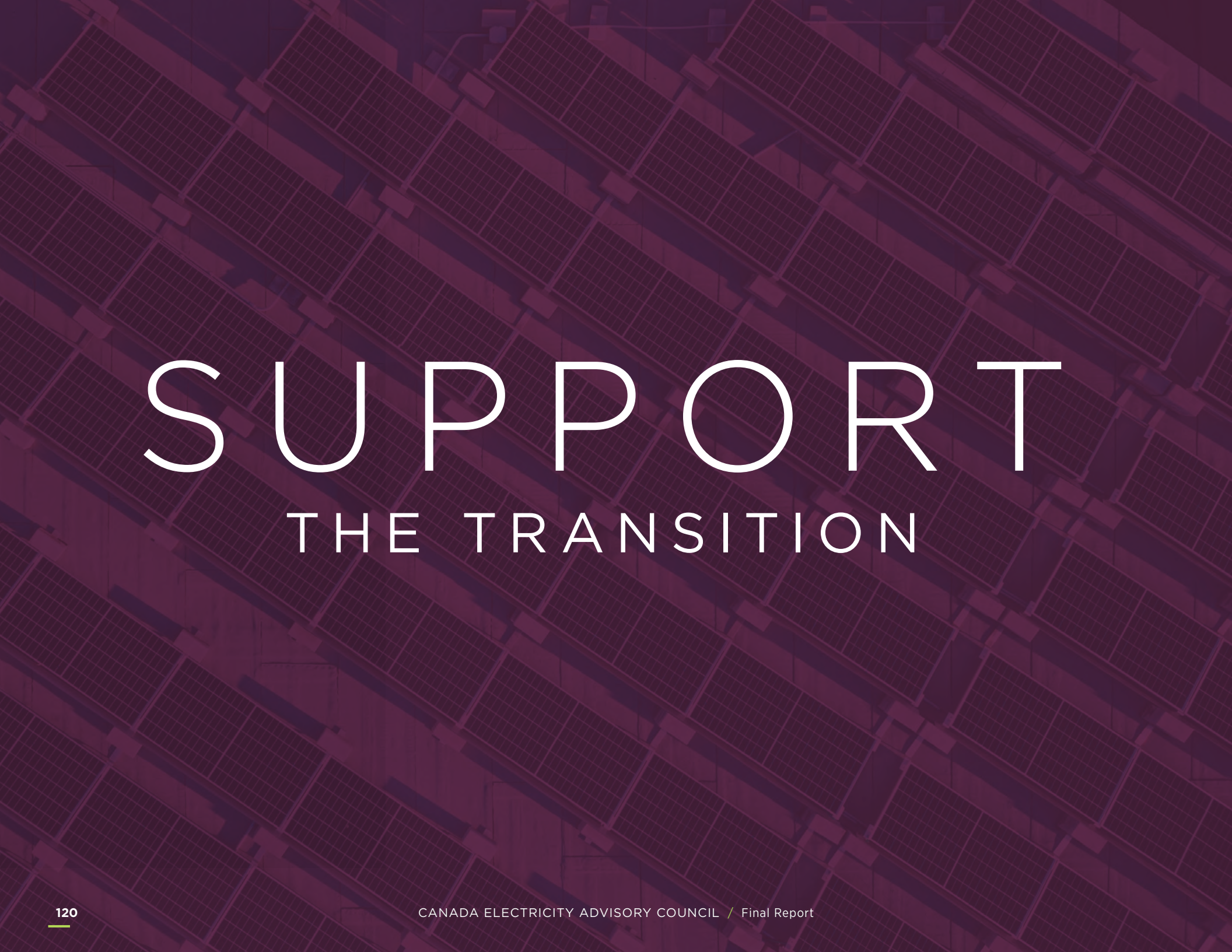
G. Providing dedicated funding support for codes and standards development (e.g. NRCan's Codes Acceleration Fund), with special consideration of codes and standards for the North.

What can provinces and territories do?

Provincial and territorial representatives can provide their unique jurisdictional perspectives and priorities in the development of codes and standards (for example, a set of Northern-specific codes and standards for heat pumps).

Code- and standard-setting bodies would need to participate in this effort to provide legitimacy, sectoral and technical awareness, and guidance as to how best to structure model codes and standard development.

Utilities and system operators can make technical experts available, in a dedicated manner, to participate in this committee on an ongoing basis.



SUPPORT THE TRANSITION

SUPPORT the Transition

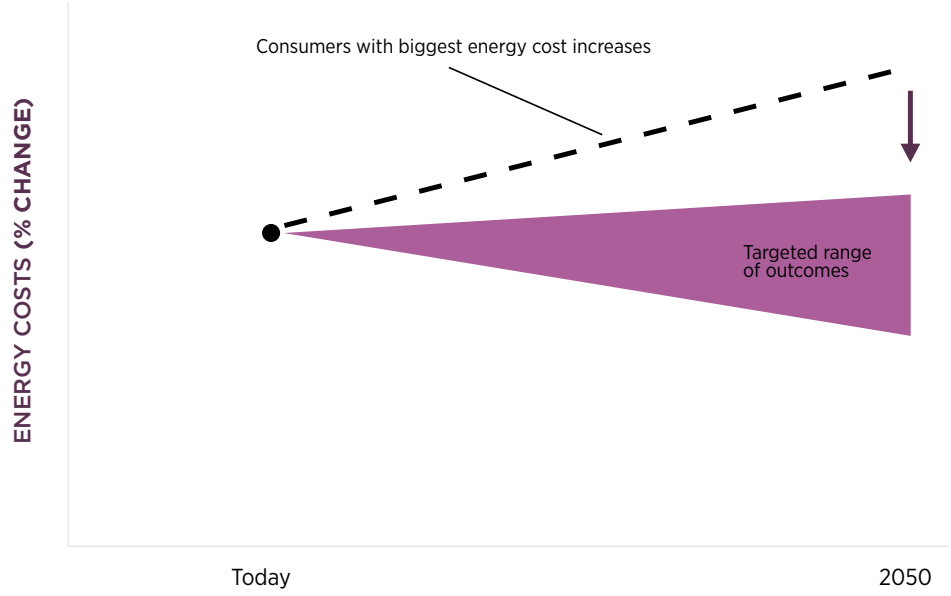
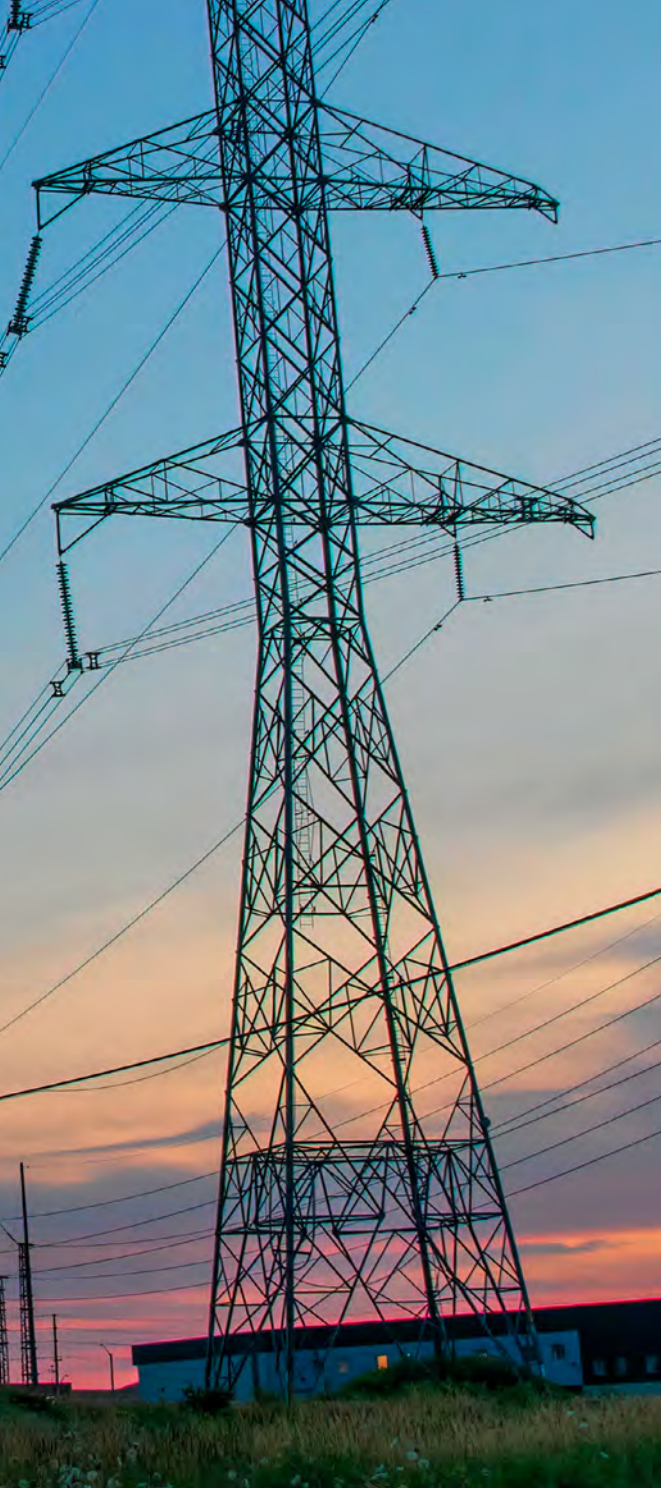


FIGURE 21: ILLUSTRATIVE DIRECTIONAL IMPACT OF 'SUPPORT THE TRANSITION' RECOMMENDATIONS

Targeted federal funding can lower costs for all Canadians, while reducing the uneven distribution between households.

The bulk of the Council's recommendations are focused largely on reducing overall costs – through better planning, speedier project review and approval processes, and reduced energy waste, among other measures.



But reducing total costs is not enough. The federal government also has an important role to play in addressing fairness and sharing the costs of the transition.

Although the switch to clean power will likely be affordable for the average Canadian, these averages can hide unevenly distributed costs. For many Canadians – particularly in fossil fuel-reliant provinces and territories, lower-income households, and Indigenous and remote communities – the challenge will be greater.

The federal government can help manage uneven distribution of costs and benefits and ensure a successful transition for all Canadians by providing additional targeted support where it is most needed. These targets should include:

- **Expanding and optimizing ITC programming**, to shift a part of costs from the rate-base to the (more equitably sourced) tax-base;
- **Inter-regional electricity transmission projects**, to leverage complementary strengths and ease the decarbonization path for fossil-reliant provinces and territories in particular;
- **Indigenous, Northern, and remote communities**, to advance economic reconciliation, notably by enabling financial participation in new energy projects; and
- **Lower-income households**, to ensure that all Canadians can access-energy saving opportunities that improve affordability outcomes.

The Council notes that these priorities overlap with key measures in the 2023 and 2024 federal budgets. Yet as significant as those are, more is needed to ensure all Canadians can partake in this unprecedented endeavour.

OPTIMIZING INVESTMENT TAX CREDITS

Announced federal ITCs can lower costs and address uneven cost distributions

Over the past year, the federal government has announced significant financial supports for a broad array of clean electricity infrastructure investments using ITCs. Totaling over $60 billion in value over the next ten years, these include ITCs for: carbon capture, utilization and storage; clean hydrogen; clean technology; clean electricity; and manufacturing.[140] A primary motivation for these ITCs is to support industry competitiveness by aligning with financial supports introduced by the Inflation Reduction Act in the United States.[141]

These supports can be expected to lower the cost of building new electricity infrastructure across Canada, and by their nature they are designed to flow proportionately to investment needs, which are likely greatest in fossil fuel-reliant provinces and territories.[142]

The Council supports this wholeheartedly, noting that it is appropriate that fossil fuel-reliant provinces and territories are more heavily supported, given the added cost burdens they face as they seek to decarbonize most of their existing electricity generation, while growing the size of their systems overall.

These ITCs can also be expected to shift some of the financial burden of the transition from ratepayers to taxpayers. The Council supports this as well, for several reasons: the societal-wide benefits of the clean energy transition, the more equitable distribution of costs facilitated by taxpayer funding, and the crucial support this provides to areas where ratepayer funds are scarce, such as in early-stage innovation.[143]

ITCs should be aligned with net-zero goals to spur investment in clean electricity projects

Concerns remain that the proposed ITCs could deter investment, owing to: delayed implementation and lack of policy certainty; the ineligibility of certain technologies and investments such as intra-provincial transmission and distribution; misalignments between the scale and timelines of the ITCs and the projects they are designed to support; and differences in the levels of incentives offered to tax-paying and non-tax-paying project proponents (including Indigenous applicants).

> "Given the massive incentives being provided in the United States Inflation Reduction Act, governments in Canada must be mindful of staying competitive and reducing customer costs by maintaining predictable investments and funding in the energy sector through a variety of tools including grants, tax credits, financing tools and partnerships."
>
> **EMERA (NOVA SCOTIA POWER)**

140 Government of Canada. 2023, April 5. Minister Guilbeault highlights the big five new Clean Investment Tax Credits in Budget 2023 to support sustainable made-in-Canada clean economy
141 Government of Canada. 2023. Budget 2023, Chapter 3: Building an Economy That Works for All Canadians.
142 Harland, K. and J. Dion. 2023. Clean Electricity, Affordable Energy: How federal and provincial governments can save Canadians money on the path to net zero. Canadian Climate Institute.
143 Support for shifting costs from ratepayers to taxpayers was also raised in several written submission to the Council.

RECOMMENDATION 18:
Align ITC programming with net-zero objectives

The Council recommends that the federal government design and implement the clean-energy-related ITCs as soon as possible, such that the scale, scope, timelines, and project eligibility are sufficient to attract investment and align with net-zero and carbon-neutral objectives. The proposed ITCs should be revised to: (i) equalize eligibility and credit limits between non-taxable and taxable entities; (ii) expand eligibility to include intra-provincial and intra-territorial transmission; and (iii) increase the scale of the inter-regional (or inter-provincial) transmission credit.

Implementation Details

The federal government should:

A. Expedite legislative and implementation processes to facilitate timely project investment (see Recommendation 1 on page 77).

B. Extend the ITCs to align with the reality of project timelines (extending the credits to 2040, so they do not expire before the projects become operational) and investment needs (to be sufficient to incentivize investment for large projects such as transmission infrastructure).

C. Expand the Clean Electricity ITC project eligibility to include high-voltage intra-provincial and intra-territorial transmission infrastructure.

D. Equalize the ITC eligibility and credit limits between non-taxpaying (including Indigenous groups and Crown utilities) and tax-paying entities and partnerships to level the playing field.

E. Permit proponents to stack the ITCs with other financial measures.

F. Allow small communities to aggregate projects and collectively apply to the ITCs where these projects might not be individually eligible.

G. Consider increasing the Clean Electricity ITC from 15 to 50 percent for electricity transmission projects connecting Canadian provinces or territories, contingent on the conclusion of a framework to support inter-jurisdictional transmission projects, in recognition of the significant challenges of pace and scale.

Refer to recommendations 6 (on page 86) and 19 (on page 128) for related supports.

What can provinces and territories do?

As indicated in relation to Recommendation 6 (on page 46), provinces and territories can significantly assist the federal government in administering ITC programming more effectively by developing formal energy roadmaps and strategies toward a net-zero or carbon neutral economy by 2050. In doing so, provincial and territorial governments can significantly enhance the effectiveness of ITCs while also enabling other, project-specific supports (see Recommendation 9 on page 97).

A FRAMEWORK FOR INTER-REGIONAL GRID INFRASTRUCTURE

Findings

Enhanced electricity interconnections between Canadian jurisdictions can support fossil fuel-reliant regions in their energy transitions

Greater inter-regional and international coordination on transmission system development is a critical strategy for lowering costs, as it can help deliver long-term economic and system-wide benefits.[144]

Inter-regional transmission reduces costs by unlocking beneficial synergies between systems – particularly by enabling the large-scale build-out of variable resources (such as wind and solar, where they are most abundant) and connecting them with dispatchable sources of energy such as hydroelectric generation facilities. Increased inter-regional transmission can also link regions with complementary demand profiles, leveraging diverse weather patterns and non-coincident peak electricity demand.[145]

In addition to lowering costs, inter-regional transmission enhances reliability, decreases the need for electricity storage, and mitigates risks that could arise from relying on international imports. Interconnections further help as a hedge against extreme weather events or periods of under-production from renewable sources, including hydroelectricity, that may impact one jurisdiction but not others.[146]

144 In 2021 NRCan and the U.S. Department of Energy released the North American Renewable Integration Study (NARIS). NARIS is recognized for performing the most comprehensive long-term analysis of power system evolution to date on the North American Grid. (National Renewable Energy Laboratory. 2021. North American Renewable Integration Study.)

145 Kanduth, A. and J. Dion. 2022. Electric Federalism: Policy for aligning Canadian electricity systems with net zero. Canadian Climate Institute.

146 Maloney, J. 2017. Strategic Electricity Interties: Report of the Standing Committee on Natural Resources. House of Commons Standing Committee on Natural Resources.

Inter-regional transmission build-out has been slow and uneven, despite increased federal efforts

Electricity transmission interconnections and trade between Canadian jurisdictions have been slow and uneven to develop,[147] with much more volume flowing instead to the U.S.[148] While Québec and Ontario can transfer relatively large volumes of electricity in both directions (the current combined transfer capacity is 2,775 MW),[149] the three jurisdictions have little or no intertie capacity.[150] The tendency for trade to be easier with the U.S compared to neighbouring provinces[151] is further exacerbated by the greater monetary returns available in American markets and the difficulty in valuing the non-monetary benefits of increased trade between Canadian provinces and territories.[152]

Despite an increased focus on the issue,153 the federal government has had limited success in spurring inter-regional transmission projects to date. Canada remains a net exporter of electricity by a wide margin, despite recently importing increased amounts of electricity from the U.S. during drought periods in the western provinces.[154]

147 CER. 2023. Canada's Energy Future
148 Gorski, J., and Jeyakumar, B. 2021. Connecting Provinces for clean electricity grids: Regional collaboration to unlock the power of hydro, wind and solar to decarbonize Canada's economy. Pembina Institute.
149 Government of Ontario. August 30, 2023. The Governments of Ontario and Québec Support New Electricity Trade Agreement.
150 CER. 2024. Provincial & Territorial Energy Profiles.
151 Van de Biezenbos, K. 2022. Lost in Transmission: A Constitutional Approach to Achieving a Nationwide Net Zero Electricity System. Osgoode Hall Law Journal (Summer 2022), p. 637-639.
152 O'Neill, P., Mueller, S., Joseph, B., Alagappann, L. and Olsen, A. 2022. Interregional Transmission Benefit Accrual Study. Energy & Environmental Economics.
153 ECCC. 2016. The Pan-Canadian Framework on Clean Growth and Climate Change. The federal government wrote that "federal, provincial, and territorial governments will work together to help build new and enhanced transmission lines between and within provinces and territories."
154 CER. 2024. Electricity Trade Summary.

Supporting inter-regional transmission development calls for a common framework

One of the most significant barriers to transmission development has been the lack of common-cost allocation and a benefit-accrual framework. An Energy and Environmental Economics (E3) report commissioned by Electricity Canada found that the federal government could play a pivotal role in developing and implementing such a framework for Canada's inter-regional transmission planning – either as a funder of specific transmission projects or as a convening body to ensure the framework is implemented fairly.[155]

A potential model that could be adapted to the Canadian context is the EU's Projects of Common Interest (PCI).[156] Analogous to Canada in some ways, the EU is a federation of member-states, each with jurisdiction over their own electricity systems. The PCI model is designed to facilitate cooperation on inter-regional energy projects between member nations by providing a centralized and agreed upon methodology for identifying, allocating, and arbitrating costs and benefits, and by providing a mechanism to bridge cost asymmetries.

"We urge the federal government to use its convening powers to bring provinces together in an ongoing collaborative forum, where ideas and knowledge can be exchanged among federal and provincial policy-makers and regulators, and where inter-provincial cooperation and trade can be fostered."

FORTIS INC.

155 Electricity Canada. 2023. 2024 pre-budget submission to Finance Canada.
156 European Commission. Projects of Common Interest and Projects of Mutual Interest. Webpage accessed April 24, 2024.

RECOMMENDATION 19:
Construct a framework to support inter-regional electricity transmission projects

The Council recommends that the Minister of Energy and Natural Resources engage counterparts at the 2024 Energy and Mines Ministers' Conference (EMMC) to jointly develop, and table in time for the EMMC in 2025, a policy framework to identify and financially support inter-regional electricity transmission projects. Using the EU's PCI framework as a starting model, it should outline governance, cost allocation, and funding components.

Implementation Details

The Minister of Energy and Natural Resources should launch the development of a framework for the identification and construction of inter-regional electricity transmission with provincial and territorial officials at the EMMC in 2024.

Given their jurisdictional authority over the electricity systems, provincial and territorial participation in this program will ultimately be voluntary. The Council strongly encourages officials from federal, provincial, and territorial levels of government to commit to producing implementation plans that accommodate appropriate authorities and jurisdictions. The plan may include detailed recommendations for approval at the EMMC in 2025, outlining governance and any funding measures or other actions required to support the identification, assessment, cost allocation and construction of beneficial, inter-regional transmission.

The framework, drawing inspiration from the EU's PCI mechanism,[157] should outline **necessary governance and cost-allocation mechanisms**, including:

A. Planning and coordination mechanisms, funded and facilitated through new or existing intergovernmental bodies, in order to undertake regional planning exercises and identify and prioritize projects of interest. To support this, the federal government may request that the CER explore how it could use its existing authorities to play a facilitating role for greater inter-regional collaboration, focused on electricity transmission.

B. Criteria and processes for identifying and initiating inter-regional transmission projects, and mechanisms to accelerate project approval and permitting processes and financial support.

C. A standardized, transparent Cross-Border Cost Allocation[158] (CBCA) mechanism to guide distribution of costs among project participants, including guidelines and authorities for sole or joint decisions and arbitration on project cost allocation.

157 Ibid.
158 European Union Agency for the Cooperation of Energy Regulators. 2023. Cross-Border Cost Allocation.

The framework would also outline a **comprehensive suite of federal funding and support measures** specific to inter-regional transmission, guided by CBCA decisions, including:

D. Federal financial support to reduce financial risk and level the uneven distribution of project costs and benefits across jurisdictions. To do so, the federal government may either:

a) De-risk demand by reserving transmission capacity rights, where doing so is deemed useful to allow anticipatory investments; or

b) Provide financial support through a direct subsidy or increase in Clean Electricity ITC for transmission projects (See Recommendation 18 on page 124).

International examples of successful models include the Connecting Europe Facility – Energy,[159] focused on addressing project cost and benefit asymmetries identified during the CBCA process, and the Capacity Contracts mechanism in the U.S. Department of Energy's Transmission Facilitation Program.[160]

What can provinces and territories do?

Provinces and territories have jurisdiction over their electricity systems and natural resources, making their support and collaboration essential in these efforts. In particular, the Council encourages provinces and territories to officially participate in such a framework and in its development. Processes related to the framework will likely vary from one jurisdiction and region to another, making participation crucial to define the criteria and procedures that best meet each jurisdiction's needs and expectations.

By actively taking part in shaping the framework, provinces and territories would benefit from ensuring that it suits their regional needs and priorities and facilitates access for their jurisdictional stakeholders to incentives and support programming, such as ITCs, direct subsidies and other funding programs.

159 European Commission. About the Connecting Europe Facility. Webpage accessed April 24, 2024.
160 United States Department of Energy. 2024. Transmission Facilitation Program.

SUPPORT FOR INDIGENOUS, NORTHERN AND REMOTE COMMUNITIES

Findings

The federal government can provide a coordinated approach to economic reconciliation with Indigenous Nations and communities across the country

Canada has benefited from a land rich with resources, while Indigenous Nations and communities have been systematically limited from sharing this prosperity. With the growing recognition that innovative, lasting approaches are needed to improve this situation, the federal government can expand upon Canada's economic reconciliation goals by introducing institutional solutions with sufficient resources to support the meaningful participation of Indigenous Nations and communities in the energy transition.

Capacity and resource issues have long limited Indigenous Nations and communities from participation in economic markets and opportunities. For example, the Indian Act (1985) prohibits Indigenous Nations from taxing their residents, selling lumber on Reserve lands, and leveraging owned assets on Reserve lands.[161] This in turn limits the capacity of Indigenous Nations and communities to finance and build equity for investments.

Furthermore, where requirements exist for consultation with Indigenous Nations and communities, these nations and communities may not possess the resources to appropriately assess the benefits and risks. The result is a limited capacity to appropriately respond to consultation requests, evaluate business cases, and secure loans to participate in large-scale energy projects.

To ensure the success of the electricity transition, the energy industry must ensure that Indigenous Nations and communities have the resources to be responsive to consultation requests. Front-end investment in Indigenous capacity will ensure that development proceeds at the necessary pace.

In its 2024 budget[162], the federal government announced its intent to establish a Crown Consultation Coordinator to ensure efficient and meaningful Crown consultation with Indigenous peoples on the issuance of federal regulatory permits to projects that do not undergo federal impact assessments. This is an encouraging move, but Indigenous Nations and communities still require resources and expertise to respond to all types of consultations. Economic reconciliation will benefit greatly from a coordinated approach, from initial Indigenous consultations through to supporting equity participation in new energy projects. Adequately funding these initiatives is critical and should include longer-term, sustainable consultation funding for Indigenous Nations and communities, as well as the development and funding of the national Indigenous Loan Guarantee Program (ILGP).

The Council welcomed the announcements regarding the ILGP in the 2024 federal budget, while also noting that the anticipated need for guarantees in the electricity sector far exceeds the total amount available. The Council estimates that the required level of guarantees for Indigenous equity in electricity sector projects could average up to $2 billion per year until 2035.

161 Gale, S. and Edwards, N. June 8, 2023. The Case for a National Indigenous Loan Guarantee Program, letter to the Honourable Chrystia Freeland, Deputy Prime Minister and Minister of Finance.
162 Department of Finance. 2024. Budget 2024.

The net-zero transition in the North and in remote communities is significantly deterred by insufficient policy certainty and support

Though a very small portion of Canada's overall emissions come from Northern and remote communities (the total for the territories combined is less than one percent),[163] the net-zero transition is an important development in these regions for reasons of economic reconciliation and social and environmental well-being. Net-zero mandates are needed in the North (including from territorial governments) to encourage the updating of utility and regulator mandates and align factors such as access to capital. Without proactive inclusion and careful consideration alongside broader federal net-zero policies, these communities could be left further disadvantaged.

In particular, the retail price of diesel fuel in remote and northern regions does not capture its true costs, which include high transport costs and health and environmental damage, masking the benefits of deploying cleaner energy sources.[164]

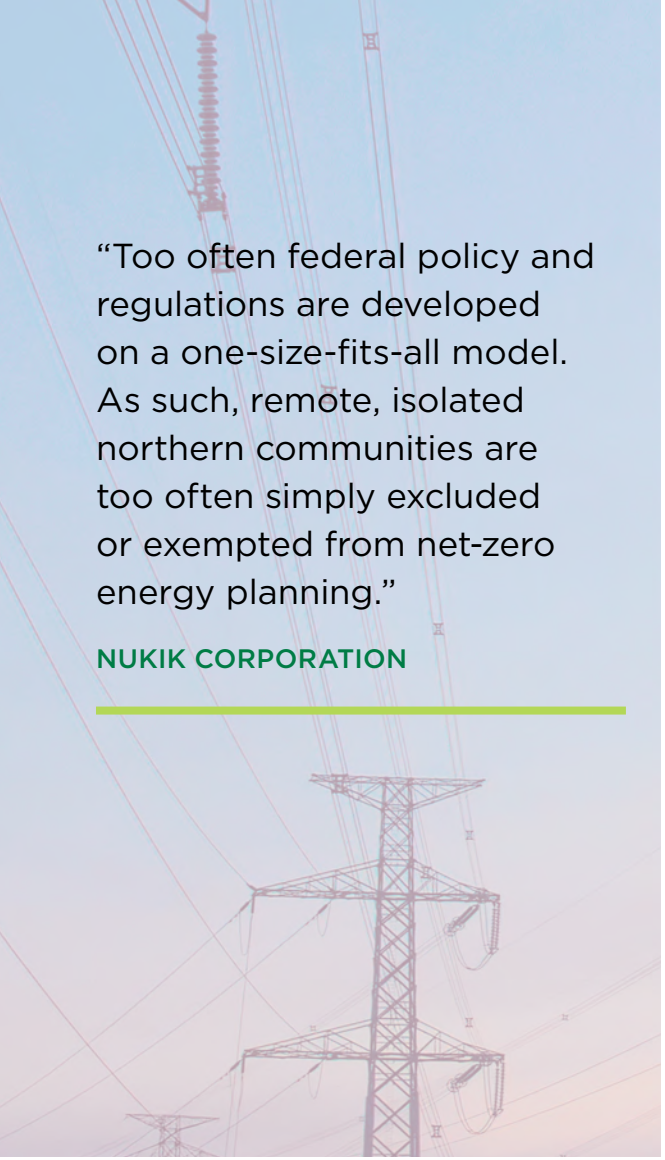
The net-zero transition has deep ramifications in the more than 280 Canadian communities not connected to larger grids and forced to rely primarily on diesel-fired electricity generation.[165] [166] Many of these communities face exorbitant energy costs, and Northern ratepayers currently face the highest electricity costs in Canada. These regions often cannot fully cover the costs of either the existing system or new projects without federal financial support, and they also face capacity challenges, including training and retaining the workforce needed to support electricity projects and infrastructure.[167]

Kivalliq Hydro-Fibre Link

The Kivalliq Hydro-Fibre Link[168] is a 150 MW transmission project led by the Inuit-owned Nukik Corporation to reduce emissions and environmental risks from diesel spills and spur future socio-economic benefits.[169]

Spanning 1,200 km from Manitoba to the Kivalliq region of Nunavut, the proposed project aims to benefit five diesel-dependent communities by providing clean power and reliable internet access, while supporting mining operations and other economic activities.

163 Canada's territories amounted to 2.6 megatonnes of carbon dioxide equivalent (MT CO2e) in 2020 or less than 1 percent of total emissions (which were 672.4 MT CO2e). Ibid 12.
164 Touchette, Y., Gass, P. and Echeverria, D. 2017. Costing Energy and Fossil Fuel Subsidies in Nunavut: A mapping exercise. International Institute for Sustainable Development.
165 CER. 2018. Market Snapshot: Overcoming the challenges of powering Canada's off-grid communities
166 Audouin, A. 2024. Nunavut's Untapped Potential: The Infrastructure Gap and Arctic Security. The Future Economy.
167 NRCan. 2024. Findings: The Clean Energy Transition for Utilities Serving Remote Communities.
168 Nukik Corporation. 2024. Kivalliq Hydro-Fibre Link | Nukik Corporation
169 Indigenous Services Canada. March 21, 2024., Minister Vandal announces federal funding towards Kivalliq Hydro-Fibre Link to advance clean energy transition and broadband service delivery to the Kivalliq region of Nunavut.



"Too often federal policy and regulations are developed on a one-size-fits-all model. As such, remote, isolated northern communities are too often simply excluded or exempted from net-zero energy planning."

NUKIK CORPORATION

The federal government has an array of programs and policies in place to support Northern and remote regions, including various funding programs to shift communities from reliance on diesel fuel and to enable Northern-focused energy research.[170] But Northern communities require more innovative and tailored approaches and investments.[171] There is a risk that more remote regions could be left behind compared to areas closer to transmission.

Existing federal funding, such as that provided by the CIB, and potential future funding sources that may be facilitated by the ILGP and ITCs, can be difficult to access in the North due to the smaller scale of many projects, the lack of major investors, limited available capital, and the fact that many projects are in the early development stages. Despite these barriers, Indigenous Nations, communities, and Indigenous-led economic development corporations are leading clean electricity project development in the North.[172] Getting these projects off the ground is uniquely challenging, as communities often lack sufficient resources to advance projects due to much smaller tax and rate bases, lower household incomes, and broader challenges to project economics.[173]

The relationship between the federal government and the territories is constitutionally distinct compared to the provinces. Under the Constitution, provinces exercise powers in their own right, whereas the territories exercise delegated powers. Over the past few decades, significant changes in governance have taken place in the territories as the federal government has begun transferring certain powers to the territories, enabling greater local decision-making and accountability—most recently with the Nunavut Lands and Resources Devolution Agreement.[174] The federal government has a unique role to play in the North to enable its energy transition due to current fiscal relationships, where a large portion of territories' resources are received through territorial transfers.[175]

170 Including, the Clean Energy for Rural and Remote Communities program, Northern REACHE, and the Indigenous Off-Diesel initiative as part of the Wah-Ila-Toos: Clean Energy Initiatives in Indigenous, rural and remote communities.
171 He, E., 2024. Funding the Territories in energy transition. Blog Post (March 25, 2024), Pembina Institute.
172 CER. 2018. Market Snapshot: Overcoming the challenges of powering Canada's off-grid communities; Lovelkin, D., Moorehouse, J., Morales, V. and Salek, B. 2020. Diesel Reduction Progress in Remote Communities (Research Summary); Indigenous Clean Energy. (2020). Accelerating Transition Data Report.
173 NRCan. 2024. Findings: The Clean Energy Transition for Utilities Serving Remote Communities; Savic, K. 2022. The case for investing in clean energy in remote communities. Pembina Institute.
174 Office of the Prime Minister of Canada. 2024. Government of Canada, Government of Nunavut, and Nunavut Tunngavik Incorporated reach final agreement on the devolution of Nunavut
175 Intergovernmental Affairs Secretariat. 2022. Intergovernmental Affairs/ Provinces and Territories.

RECOMMENDATION 20:
Advance economic reconciliation with Indigenous Nations

The Council recommends a coordinated approach to economic reconciliation that supports equity participation in new clean electricity projects. This coordinated approach must ensure sufficient capacity to span from initial consultation conversations through to the final stage of supporting equity participation in new energy projects.

The approach should include:

1. Adequate long-term, sustained capacity funding for Indigenous Nations and communities to develop and retain the resources needed for consultation and evaluation of rights impacts;
2. Advisory resources and support for the business-case development process, including project evaluation and business analysis; and
3. Annual expansion of the newly created ILGP in partnership with Indigenous leaders and other experts.

Implementation Details

A. The federal government should provide sufficient resources on a permanent basis to ensure Indigenous Nations and communities have the human resources available to be responsive to consultation requests, learning from existing programs in Ontario and BC.[176] The mechanism should include a dedicated advisory position to support Indigenous Nations and communities in assessing project impacts on Indigenous rights. Funding for these resources must be proportional to the volume of consultation requests that Nations and communities receive.

B. The federal government should provide financial support, directly or through existing bodies, to support the economic analysis and viability of opportunities available to support Indigenous Nations in their retention of economic and legal expertise on projects that advance the energy transition.

C. The federal government should implement the ILGP announced in the 2024 federal budget as soon as possible, while also considering longer-term requirements beyond the initial $5 billion, particularly with respect to equity ownership of electricity sector projects. The ILGP must be designed to enable flexibility in (1) the allocation of risk between Indigenous Nations and communities and the project proponent; (2) the level of Indigenous equity participation (including up to 100 percent), and (3) the type of project (e.g. clean generation, transmission, storage).

Please refer to Recommendation 18-D for related supports.

176 Currently there are provincial programs, such as the New Relationship Fund in Ontario and the New Relationship Trust in BC providing grant based funding to support Consultation staff in Indigenous Nations and communities. (Government of British Columbia. 2024. New Relationship Trust; Government of Ontario. 2024. Funding for Indigenous economic development.)

Indigenous Loan Guarantee Programs in Canada

Beyond the recently announced launch of the ILGP outlined in the 2024 federal budget, there are three other Indigenous loan guarantee programs in Canada, each with its own terms and sector focus:

- The Alberta Indigenous Opportunities Corporation (AIOC) is supplying up to $3 billion in loan guarantees to support Indigenous groups and communities across the province in natural resources, agriculture, telecommunication, and transportation projects;
- The Saskatchewan Indigenous Investment Finance Corporation is providing loan guarantees of at least $5 million each to Indigenous communities and entities for equity investments in eligible natural resource development and value-added agriculture projects; and
- The Ontario Indigenous Loan Guarantee Program is supporting new renewable energy infrastructure and other electricity infrastructure projects, providing funding of $5 to $50 million per project.

These programs are helping to deploy much-needed capital supporting Indigenous Nations and communities. For example, as of March 31, 2020, ten loan guarantees have been approved under the Ontario program, and the aggregate principal of loans guaranteed stands at $470 million.[177]

177 Government of Ontario. 2020. Ontario Financing Authority 2020 Annual Report.

What can provinces and territories do?

The Council recognizes the commitment of provincial and territorial governments to reconciliation and their acknowledgement of the challenges that Indigenous Nations and communities face. In implementing their own programs, provincial and territorial governments can work with the federal government to ensure complementary measures and implement programs that support the same objectives of capacity building, project and business case evaluation, and equity participation.

RECOMMENDATION 21:
Support the North and remote communities

The Council recommends that the federal government accelerate and substantively scale up its support for net-zero energy systems and clean electricity projects in Northern and remote communities, particularly those that are Indigenous.

Building on current programs, the federal government should:

1. Facilitate net-zero pathways and mandates in provinces and territories for Northern and remote regions;
2. Ensure that national net-zero electricity policies include provisions for the North that advance similar net-zero objectives;
3. Convene and facilitate partnership opportunities between governments, utilities and communities, particularly Indigenous communities, including inter-regional initiatives;
4. Scale up funding and target it better by considering equity factors, including support for technology research and all project lifecycle phases, particularly development, operations and maintenance, and end-of-life; and
5. Provide transparent data and guidance to quantify the true cost of diesel and assist in shifting subsidies to clean energy projects.

Implementation Details

A. The federal government should ensure that policies developed to guide and support Canada's net-zero transition specifically address the unique circumstances of Northern and remote communities, particularly Indigenous communities, and outline measures that meet those circumstances. The federal government must define clear mandates and support mechanisms to enable the transition in these regions. It should also provide support to territorial governments and utilities for the development of net-zero mandates and pathways, including: convening and funding regional discussions; broader regional planning and cooperation activities; increased support for Community Energy Plans in the transition to a net-zero future, with emergency planning for enhanced resiliency and reliability; and best practices for provinces, territories, utilities and regulators regarding net-zero mandates and pathways that address the unique northern and remote community context.

B. Support for the North and remote communities should enable the achievement of similar policy outcomes to the rest of Canada, but allow for different timelines, objectives, and policy tools, to reflect the unique context and needs of the North. Federal funding specific to the North and remote communities should incorporate, and ideally make public, transparent data and guidance on how to quantify the true cost of diesel use in the North. Further focus could be given to:

i. Enhancing funding accessibility and stacking for Northern and remote communities;

ii. Expanding funding to tailored feasibility studies, research and development, and clean electricity infrastructure projects in the North, including community-scale projects; and

iii. Accounting for specific barriers and the full life cycle of Northern and remote projects in program design.

What can provinces and territories do?

Provincial and territorial governments adjacent to areas facing these challenges can collaborate with other governments and partners to identify opportunities to address some of the challenges describe in this report, including exploring inter-regional transmission opportunities and incentivizing investment opportunities where possible to promote clean electricity industry development and planning in these regions.

TARGETED SUPPORT FOR LOW-INCOME CANADIANS

Findings

The federal government needs a comprehensive, national approach to address energy poverty in Canada

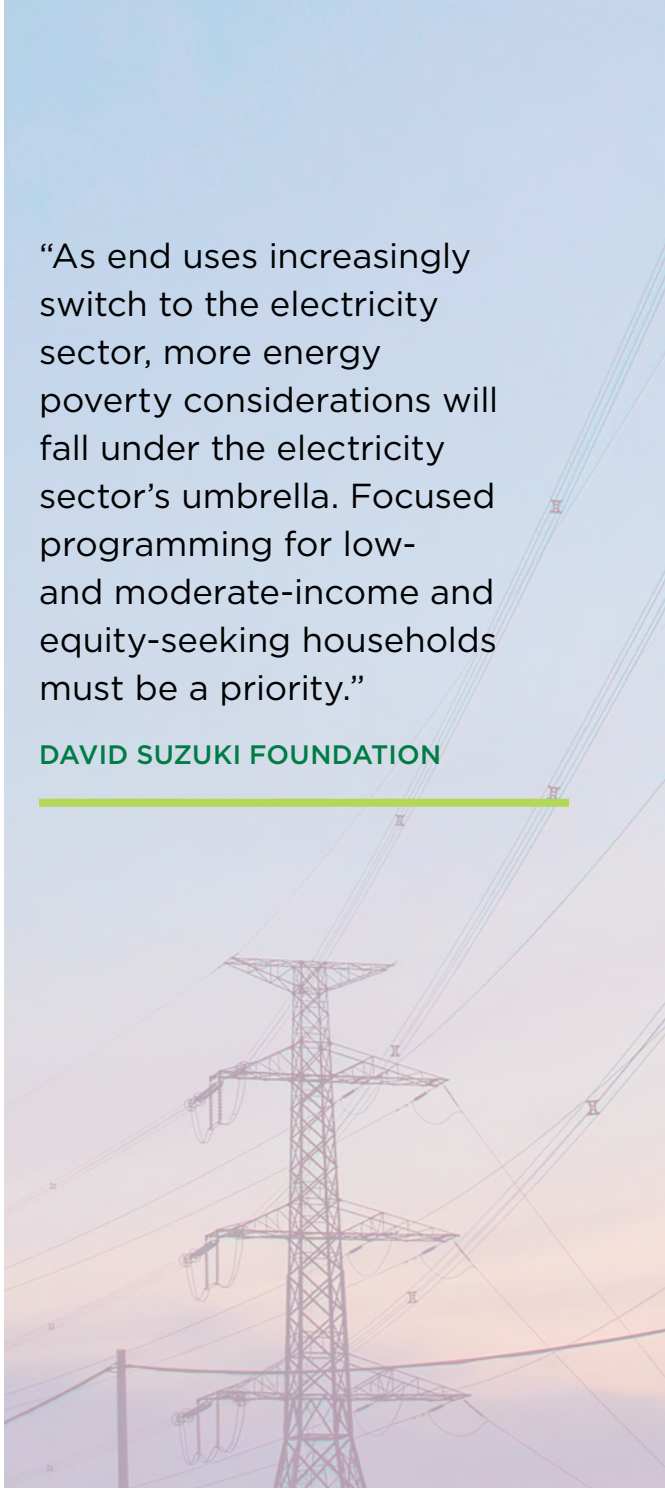
Depending on how it is measured, energy poverty is reality for between 6 and 19 percent of Canadian households.[178] Many people living in energy poverty are renters, who have less control over energy use and the implementation of efficiency measures in their homes.

Energy poverty varies dramatically between and within provinces and territories. For example, the rate of energy spending as a proportion of income is almost triple the national average in the Atlantic provinces and double the average in Saskatchewan.[179]

While electrification is poised to lower energy costs for the average Canadian household, the proportion of lower-income households that will face higher net energy costs is expected to be higher than the population average, in the absence of supportive policies.

The 2024 federal budget recently announced $800 million to be directed to energy efficiency retrofits for households with low to medium incomes.[180] This is an important step, although significantly below estimates of the overall need.[181]

> "As end uses increasingly switch to the electricity sector, more energy poverty considerations will fall under the electricity sector's umbrella. Focused programming for low- and moderate-income and equity-seeking households must be a priority."
>
> DAVID SUZUKI FOUNDATION



178 "Energy poverty" is broadly defined as households that spend a higher-than-average proportion of their income on energy costs and have difficulty heating, cooling and powering their homes (Riva, M., Kingunza Makasi, S., O'Sullivan, K.C. et al. 2023. Energy poverty: an overlooked determinant of health and climate resilience in Canada. Can J Public Health, 114, 422–431).

179 CCEI. 2023. Energy Fact Book, 2023-2024.

180 Department of Finance. 2024. Budget 2024.

181 Efficiency Canada. April 12, 2024. Canada's Housing Plan helps low-income Canadians reduce costs with energy efficiency; Affordability Action Council. 2023. Retrofit Reset: Prioritize Low-Income Households. Institute for Research on Public Policy.

Canada lacks an established definition for energy poverty, standardized indicators for measuring it, and the data collection and analytical tools needed to use the information for effective program development and delivery. These deficiencies present a significant challenge for consistently addressing the prevalence and impact of energy poverty and for addressing the unique challenges faced by vulnerable groups across the country, including low-income individuals, newcomers, seniors, and people with disabilities and other health challenges.

The federal government can play a key role in supporting provincial and territorial energy poverty programming through direct funding, collaborative development of a framework for data collection and dissemination, and other guidelines and tools to support jurisdictions in monitoring progress on this issue.

Establishing a structured framework will be crucial for a more nuanced understanding of the problem and better targeting of resources to address it. A comprehensive framework can help provinces and territories to identify areas in need of support and tailor their energy poverty programs accordingly, leading to more efficient interventions and strategic resource allocation.

Collaboration with provinces, territories and relevant agencies is needed, as these entities are best positioned to develop and deliver programs tailored to the unique needs and cultural considerations of their customers, and to leverage local delivery infrastructure. But some provinces and territories have insufficient capacity to develop and deliver such energy poverty initiatives, so direct funding from the federal government to these agencies is critical to ensure that the issue is addressed consistently across the country.

RECOMMENDATION 22:
Expand funding for energy efficiency programs directed at lower-income Canadians

Building on its 2024 budget announcement, the Council recommends that the federal government expand its funding commitment to include: (i) additional funding for provincial and territorial energy efficiency programs directed to the needs of lower-income Canadians; (ii) a mechanism to develop and publish guidelines and tools to support provincial and territorial programming and address deficiencies in federal data; and (iii) guidelines for the collection, analysis and dissemination of data relevant to the development of energy poverty programming.

Implementation Details

The federal government should:

A. Establish robust guidelines and tools to accomplish the following:

i. Development of a definition of energy poverty in Canada to support consistent and effective programming;

ii. Development of consistent and robust guidelines and tools to improve data collection, analysis, and dissemination, for better identification of those in need and more targeted program delivery;

iii. Implementation of tools similar to the Energy Dashboard operated by Nova Scotia's EfficiencyOne, providing examples of effective data collection and analysis tools for targeted energy efficiency programs; and

iv. Establishment of critical indicators for measuring energy poverty to improve energy efficiency program access and optimize program delivery.

B. Provide at least $2 billion over 4 years in direct funding for provincial and territorial programs that target efficiency improvements for lower-income Canadians to empower local authorities (such as utilities and provincial or territorial agencies) in tailoring initiatives to unique challenges and leveraging local expertise for effective solutions. This should include:

i. Developing a funding mechanism to meet federal targets that focuses efforts towards maximizing long term benefits; and

ii. Continuing to enable no-cost retrofits for low-income and energy-poor households, with assurances to include and protect renters beyond the 2024 federal budget announcements. These retrofits should ensure that specific mechanisms are put in place for rental buildings and non-market and social housing, and include energy efficiency and climate adaptation measures that both reduce heating energy demand and address cooling for extreme heat conditions.[182] The federal government should also provide increased, targeted support for energy efficiency upgrades and climate-aligned housing development in Indigenous Nations and communities.[183]

C. Enhance collaboration among provinces, territories, and relevant agencies in order to develop, maintain and share data to support best practices in energy poverty programming.

What can provinces and territories do?

Utilities can play a crucial role in mitigating energy poverty. To enhance the understanding of household-level issues and effectively reach vulnerable groups such as Indigenous peoples, newcomers, and seniors, it is imperative to establish guidelines for sharing utilities data with Statistics Canada.

This collaboration will help fill data gaps, identify energy-poor households, and ensure that the value of resources is effectively delivered to those in need. By leveraging utilities data and collaborating with Statistics Canada, better targeted and effective energy poverty programs can be delivered to address the unique challenges faced by vulnerable communities across Canada.

182 Recommendations adapted from: Task Force on Housing and Climate. 2024. Blueprint for More and Better Housing; Affordability Action Council. 2023. Retrofit Reset: Prioritize Low-Income Households. Institute for Research on Public Policy.

183 Indigenous Clean Energy has costed the total to upgrade and retrofit existing homes to meet advanced energy efficiency standards in all Indigenous communities at $5.4 billion by 2030 (Indigenous Clean Energy. 2021. Energy Foundations.).


SAVE
ENERGY

SAVE Energy to Lighten the Load

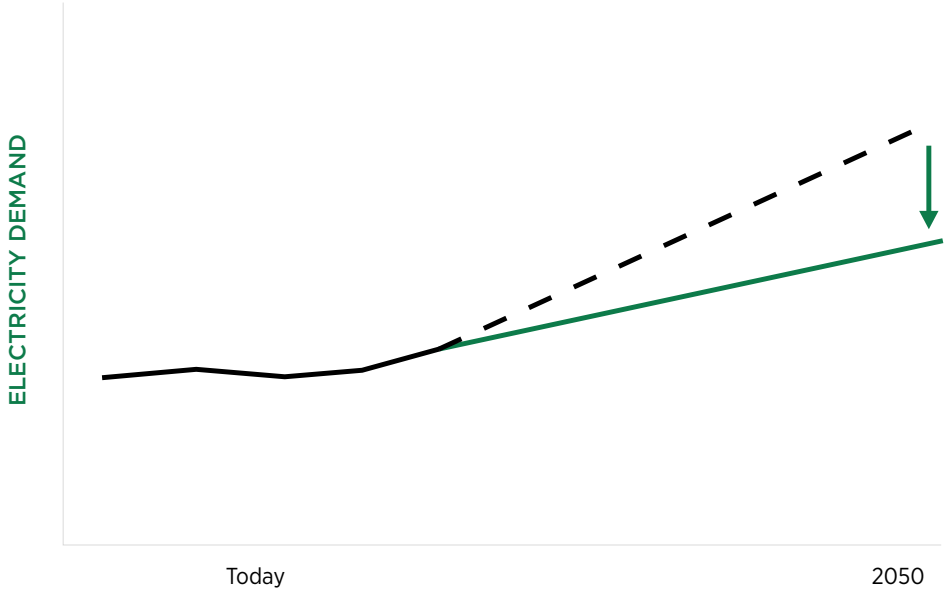


FIGURE 22: ILLUSTRATIVE DIRECTIONAL IMPACT OF 'SAVE ENERGY TO LIGHTEN THE LOAD' RECOMMENDATIONS

Energy efficiency and load flexibility reduce electricity demand, minimizing investment needs, reducing consumer bills and enhancing reliability.

Driving energy efficiency and DSM is critical to:

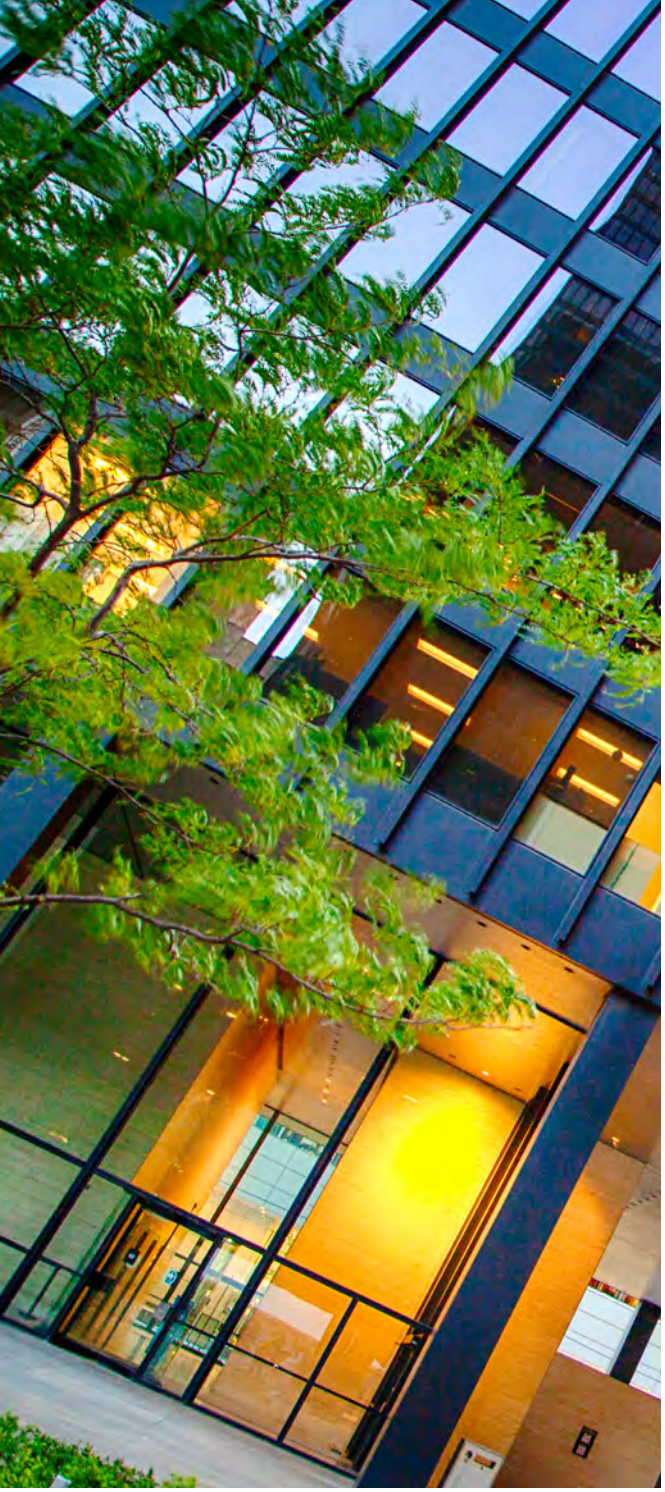
- **Reduce the need for costly electricity infrastructure**, making both the scale and speed of the clean power build-out more achievable and affordable;
- **Increase electric system reliability**, by reducing stress on power grids and enabling utilities and system operators to manage peak demands through flexible loads;
- **Protect consumers of all sectors**, by lowering their energy bills and improving both housing affordability and business competitiveness; and
- **Protect households**, by increasing their resiliency against extreme weather events and power outages, in particular by reducing heat loss through improved building shells.

In December 2023, the federal government joined 123 other nations in committing to "the principle of energy efficiency as the 'first fuel' at the core of policy-making, planning, and major investment decisions".[184]

At the same meeting, the federal government committed to taking comprehensive domestic actions to contribute to a doubling of the annual rate of global energy efficiency improvements.

Canada has no concrete plan at present to achieve this efficiency commitment.[185] Furthermore, while the 2023 federal budget provided significant incentives to encourage growth of clean power, it was largely silent on the demand side of the equation. This needs to change.

184 United Nations Framework Convention on Climate Change. 2023. Global Renewables and Energy Efficiency Pledge.
185 While the Council is aware that a Green Building Strategy may soon be released, energy efficiency touches on all sectors (buildings, transportation and industry), and therefore requires a comprehensive plan if Canada is to meet its commitment.



In Canada, provinces, territories, and utilities do most of the heavy lifting on demand-side solutions, providing their own funding, financing, program delivery and regulatory powers. The federal government has three important roles to play:

1. **Accountability and consistency** in measuring and reporting on progress toward commitments;
2. **Codes, standards, and procurement** to drive broad, structural, and long-lasting change; and
3. **Targeted funding** to supplement provincial and territorial investments, much as it does with power generation.

The Council believes that these are the appropriate tasks for the federal government to take on in order to catalyze substantive improvements in DSM, improve affordability, reliability, and resiliency, and limit the growth of electricity investment requirements.

ACCOUNTABILITY AND CONSISTENCY

Findings

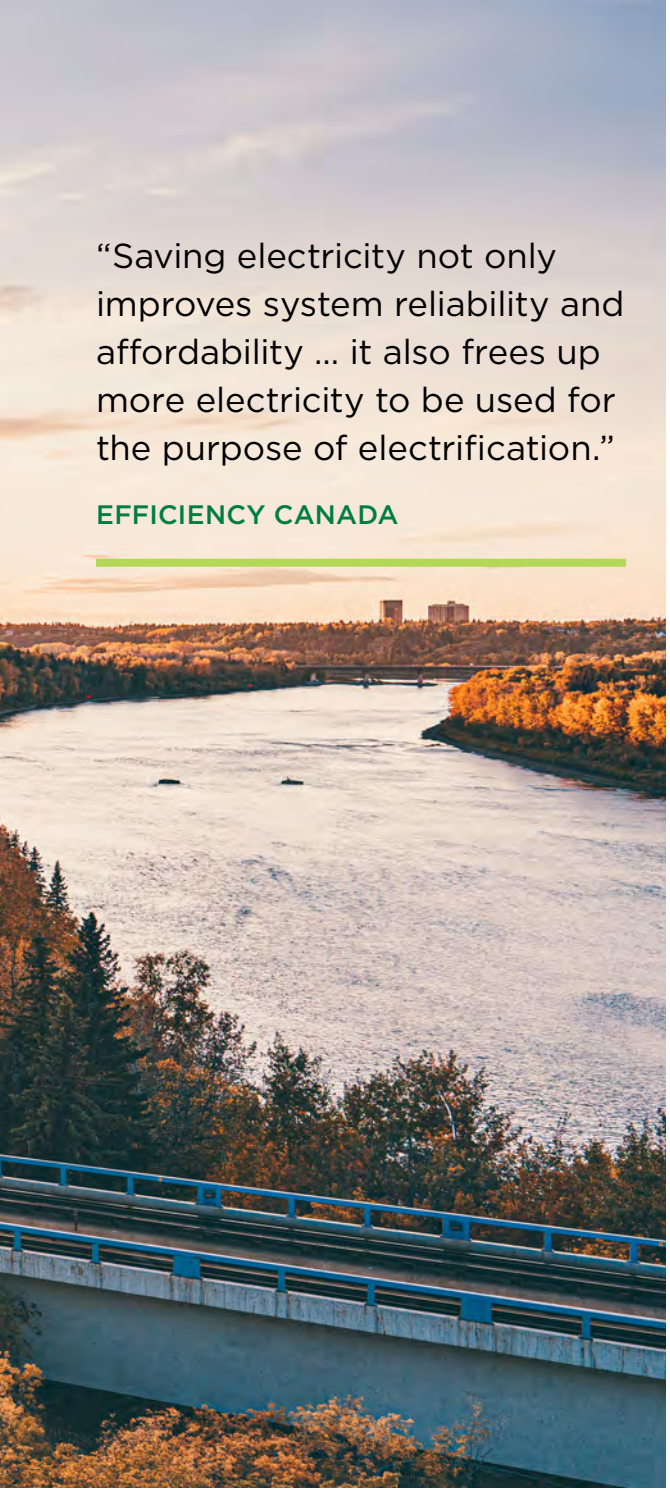
The federal government made national and international commitments on energy efficiency but lacks adequate measures for accountability

The federal government has made a series of commitments on energy efficiency over the years, including commitments under past Federal Sustainable Development strategies in line with the UN Sustainable Development Goals, in national climate plans. The federal government has committed, along with other nations, to take domestic actions that will contribute to a doubling of the pace of global energy efficiency improvements by 2030, from the current 2.2 percent to four percent per year.[186]

In Québec, Hydro-Québec's Action Plan expects efficiency and demand response to provide 3,500 MW of equivalent demand reductions by 2032.[187] Similarly, Ontario has increased funding for its energy-efficiency programs, bringing total funding to more than $1 billion over the current 2021-2024 Conservation and Demand Management framework period.[188]

The Council supports these commitments, as their achievement will significantly lower both the costs and risks of the clean energy transition. Still, the federal government needs to update its policies to better reflect these commitments. For example, Canada's 2030 Emissions Reduction Plan, which was signed into law through the Net-Zero Emissions Accountability Act (2022), features energy efficiency prominently, but it does not reflect recent commitments and program announcements, nor does it establish a robust framework for action.

186 United Nations Framework Convention on Climate Change. 2023. Global Renewables and Energy Efficiency Pledge. COP28.
187 Hydro-Québec. 2023. Action Plan 2035: Towards a decarbonized and prosperous Québec.
188 Independent Electricity Systems Operator (IESO). 2024. 2021-2024 Conservation and Demand Management Framework



"Saving electricity not only improves system reliability and affordability … it also frees up more electricity to be used for the purpose of electrification."

EFFICIENCY CANADA

Canada is facing a housing crisis – addressing this crisis is a generational opportunity to improve building efficiency for health, climate, and affordability

To address Canada's housing crisis, 5.8 million new homes will need to be constructed nationwide by 2030.[189] The drive to reduce the housing deficit, if not done thoughtfully, could perpetuate and exacerbate the country's energy challenge, while also leading to unnecessarily high heating bills for homeowners. On the other hand, if new housing initiatives are designed to encourage high efficiency building practices, this may lead to a standardization of energy efficiency building practices that can enhance Canada's performance toward its international efficiency commitments.

The affordability crisis and climate crisis cannot be tackled in isolation, nor do Canadians expect them to be. According to public opinion research, nearly nine in ten Canadians are concerned about affordability of housing, while more than three-quarters believe it is important that new housing construction minimize emissions and enhance climate resiliency.[190] Meanwhile, demand continues to outweigh supply even in the rental market after recent surges in apartment construction.[191]

The federal government has announced new measures to increase the pace of construction, including a top-up of $15 billion for the Apartment Construction Loan Program and the new $6-billion Canada Housing Infrastructure Fund.[192] The Council acknowledges this progress and approves of the $6-billion commitment being tied to provincial and territorial recipients adopting forthcoming changes to the National Building Code. Canada has a generational opportunity to further leverage these new investments to align affordability, energy, and climate goals.

189 Canada Mortgage and Housing Corporation. 2022. Housing Shortages in Canada: Solving the Affordability Crisis.
190 Sheppard, E. 2023. Opinions on Housing and Climate: Do Canadians Want a Climate-Centred Fix to Housing?
191 Canada Mortgage Housing Corporation. March 27, 2024. Apartment construction sustains housing starts.
192 Office of the Prime Minister of Canada. April 3, 2024. Unlocking housing construction and launching Canada Builds

Federal, provincial, territorial, and municipal governments have critical roles to play to encourage low-carbon construction and densification and thus avoid locking in further emissions in the building sector, maximize the benefits of electrification, and ensure affordability. The Council broadly concurs with the spirit of the recommendations of the Task Force on Housing and Climate[193], which advocate for the federal government harnessing "the power of the purse" to support affordable housing and energy efficiency in tandem.

Energy efficiency drives down home energy costs

Comparing the average annual home energy costs of different housing types reveals significant savings to be generated through energy efficiency. Older homes, which tend to be less efficient, face 29 percent higher annual home energy costs relative to the average, and 76 percent higher relative to newly constructed homes of the same size. Renovating older houses to the level of an average house can reduce home energy bills by nearly $800 per year. Building to Passive House standards can similarly cut bills by more than $900 per year compared to a typical new construction, resulting in average annual home energy costs of only $1,010 for a 1,500-square-foot house. Put differently, not building to Passive House standards can add nearly $50,000 to the long-term operating cost of a home, largely due to heating inefficiencies.[194]

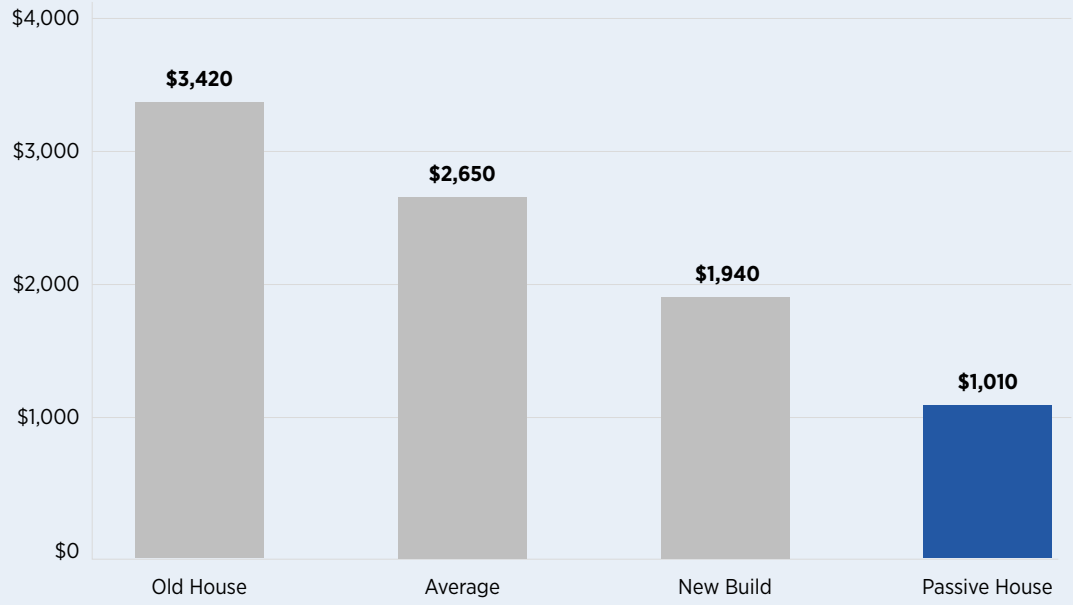


FIGURE 23: AVERAGE ANNUAL HOME ENERGY COSTS OF DIFFERENT HOUSING TYPES. COSTS ARE REPRESENTATIVE OF A 1,500 SQUARE FOOT HOUSE. INCLUDES HEATING AND COOLING, WATER HEATING, APPLIANCES AND EQUIPMENT, AND LIGHTING, BUT DOES NOT INCLUDE TRANSPORTATION ENERGY COSTS. 'OLD HOUSE' REFERS TO HOMES BUILT BEFORE 1946, WHILE 'NEW BUILD' DENOTES HOMES CONSTRUCTED AFTER 2019.[195]

193 Task Force on Housing and Climate. 2024. Blueprint for more and better housing.
194 Assuming 0 percent real energy rate increases over a period of 50 years.
195 Chart based on energy spending, floorspace, and dwelling vintage data from NRCan's Office of Energy Efficiency Comprehensive Energy Use Database and passive house data from Tandem Architecture Écologique.

RECOMMENDATION 23:
Create an energy efficiency accountability framework

The federal government should, within the next year, adopt a formal accountability framework for energy efficiency and related DSM goals. The framework must account for existing programs at the provincial and territorial levels to avoid duplication.

Implementation Details

An accountability framework should include the following:

A. Identify the entity ultimately responsible for ensuring success (e.g., NRCan) and clarify reporting requirements to Parliament regarding Canada's progress toward its commitments;

B. Establish a methodology to systematically measure success on the goal of doubling the rate of energy efficiency improvements by 2030, while simultaneously adopting a related goal for load flexibility;

C. Delineate second-tier progress indicators (e.g. the rate of home retrofits, the average design efficiency of new housing starts) that together would achieve the goal; and

D. Define a broad strategy, including but not limited to the components discussed in other recommendations, including the application of the Efficiency First principle, designed to achieve these goals.

What can provinces and territories do?

Provinces, territories have the tools needed to create their own efficiency and DSM frameworks and plans, including the ability to set high-performance targets for new construction (as British Columbia has done). Similarly, municipalities have the tools to mandate staged performance requirements for existing buildings (for example, Vancouver[196] and Montreal[197]), and to adopt pro-density reforms to enable more housing with less sprawl.

196 Silverman, B. 2022. Vancouver Adopts First Building Performance Standard in Canada. Institute for Market Transformation
197 City of Montreal. 2023. By-law concerning GHG emission disclosures and ratings of large buildings

RECOMMENDATION 24:
Link federal investments in housing to the highest energy-saving standards

Similar to recent 2024 federal budget announcements for transit funding that encourage density planning, the Council recommends that the federal government ensure new housing developments that it subsidizes (or otherwise supports) meet the highest tiers of Canada's National Model Building Code (NMBC), while also incentivizing the adoption of pro-density reforms. Both are essential for ensuring that solutions to the housing crisis do not spill over, directly or through power rates, into unaffordable energy bills for new and existing households.

Implementation Details

Ensure that federal funding for new housing:

A. Either requires or strongly incentivizes construction to the highest tiers of the NMBC; and

B. Recognize the achievements of municipalities with strong pro-density regulations that minimize the energy demands for housing and transportation.

What can provinces and territories do?

The Task Force on Housing and Climate has outlined a list of actions for provincial, territorial and municipal governments. For example, provincial and territorial governments can adopt highest- tier building codes and allow municipalities to exceed building code provisions for climate resilience and energy efficiency, as long as they can show rapid permitting and cost savings to the building occupant. Municipalities can amend local zoning and develop and implement local clean energy incentive programs.

FEDERAL SUPPORT FOR DEMAND MANAGEMENT

The federal government has announced significant funding for growing clean electricity capacity, but support for DSM is lagging

The 2023 federal budget announced significant funding for clean energy, with an emphasis on growing the supply of renewable electricity, in particular via the clean electricity ITC and clean technology ITC (see page 123).[198] Additionally, the Smart Renewables and Electrification Pathways Program (SREPs) was recapitalized in the 2023 federal budget with an increase of $3 billion, allocated over 13 years, to support critical regional priorities and Indigenous-led projects.[199] This recapitalization builds on the first round of SREPs funding, announced as part of the 2021 and 2022 federal budgets, which allocated over more than $1 billion toward 106 approved projects that focused on the deployment and capacity-building of renewable energy and grid modernization initiatives.[200]

The Council fully supports these measures, as well as other ongoing federal supports for renewable energy and the broader energy transition. However, the Council notes that relative to growing capacity for renewable electricity, there has been disproportionately less federal focus on DSM and grid modernization initiatives, which are essential for managing demand, optimizing energy savings, and minimizing investment needs.

Given that federal resources are limited, the Council has identified a need to prioritize DSM in federal supports.

198 Government of Canada. 2023, April 5. Minister Guilbeault highlights the big five new Clean Investment Tax Credits in Budget 2023 to support sustainable made-in-Canada clean economy
199 Department of Finance. 2023. Budget 2023.
200 NRCan. 2024. Smart Renewables and Electrification Pathways Program

RECOMMENDATION 25:
Prioritize demand management in federal supports

Given current budget constraints, the Council recommends that the federal government transition the Smart Renewables and Electrification Pathways (SREPs) program towards supporting demand-side solutions, notably energy efficiency, demand flexibility and related grid modernization initiatives. Alternatively, or in addition, the federal government could allocate additional funding specifically for grid modernization and DSM initiatives, supplementing existing programs.

Implementation Details

To achieve this, the federal government should:

A. Ensure that the update of the SREPs after recapitalization in the 2023 budget includes a phased reduction in support for established renewable energy projects, gradually repurposing those funds for DSM solutions, including distribution-system energy efficiency, demand flexibility, and related distribution-grid modernization technologies; and ensure that electricity-consuming entities and project aggregation entities are eligible proponents.

B. Include requirements for proponents to share data and results from project implementation, including public dissemination in a standardized data format, to enable broad adoption of proven and innovative technologies that enhance distribution-system energy efficiency and demand flexibility, following completion of federally supported demonstration, deployment, and pilot projects.

C. When prioritizing the evaluation of project applications, consider alignment with provincial and territorial DSM-related energy roadmap priorities.

See Recommendation 22 on page 139 for related supports.

What can provinces and territories do?

Most provinces and territories already taken the lead on DSM to varying degrees. Going forward, they can support demand-side prioritization by ensuring they are fully assessed and integrated in their published energy roadmaps and plans, and by ensuring sufficient funding – directly or through regulated utilities – to ensure all cost-effective DSM is pursued.

To enable the federal government's ongoing evaluation of its programs, provincial and territorial governments can also facilitate the sharing of results in standardized data formats from projects supported by their programs. This can assist in the assessment of the effectiveness of the program, which informs program design evaluation, particularly with respect to the impact of public funding and support to the electricity sector.

MAXIMIZING FEDERAL LEVERS

Findings

Market-wide structural changes are needed to enable long-term savings in actions promoting demand-side solutions

Utilities, system operators and provincial and territorial agencies have long delivered customer-facing programs designed to encourage the adoption of demand-side energy solutions. Many utilities have been tasked with investing in DSM programs in situations where they can create savings at a lower cost than the supply-side investments these programs help the utilities avoid. Federal policy can augment such initiatives with the market-wide structural changes needed to enable long-term savings, including efficiency standards for energy-using equipment; building codes that provinces and territories can adapt and adopt; procurement rules that use the federal government's purchasing power to encourage the development of supply chains, which are then able to scale into private sector markets; and targeted efforts at addressing common supply chain challenges.

Energy-efficiency standards for equipment can support energy savings for Canadians and improve economic competitiveness

Improving the efficiency of energy-using products, such as heating equipment, electric motors, and other appliances, can significantly reduce greenhouse gas emissions and other pollutants. For example, high-performance cold-climate heat pumps create a unique opportunity to ensure that packaged central air conditioning systems are adjusted to enable heating as well, thus offering highly efficient heating at low incremental costs.[201]

Differences in the energy efficiency or testing standards of these products, however, can hinder cross-border trade and investment,[202] – increasing costs for Canadians. Canada's standards are generally aligned with those of the U.S., its largest trading partner, but sometimes lag behind. Overall, there is a need to better track technology and market developments so that they are properly reflected in consumer standards for energy-using products.

Addressing building emissions is also a critical measure for meeting Canada's climate and affordability targets. (Canada's buildings account for 13 percent of national greenhouse gas emissions – 18 percent if electricity-related emissions are included.[203])

The required actions range from upgrading building envelopes and heating and cooling systems to replacing fossil fuels (heating oil, diesel, and natural gas) with clean electricity. The federal government can significantly assist in improving energy efficiency through the development of the National Building Codes. Encouraging the adoption of these codes by the provinces and territories helps to enable electrification and generate cost savings and emissions reductions.[204]

201 NRCan. 2021. Central air conditioners and heat pumps.
202 Treasury Board Secretariat. 2016. Joint Action Plan for the Canada-United States Regulatory Cooperation Council
203 NRCan. 2023. Green building principles.
204 Simon, S. 2024. Driving Climate Action: How Federal Leadership Can Shape Mandatory Building Performance Standards in Canada. Efficiency Canada, Carleton University, Ottawa, ON.

British Columbia's Building Codes

British Columbia's Energy Step Code leads Canada with an innovative tiered approach to energy efficiency in buildings.

The new code is structured into "steps" that set increasingly stringent performance requirements for buildings, with the ultimate goal of making all new constructions net-zero ready by 2032.[205] This approach not only promotes higher energy efficiency but also encourages innovation and the use of advanced technologies in construction. Local governments in BC have the authority to incentivize or mandate adherence to these steps, providing flexibility and supporting widespread adoption.

Developed collaboratively by local governments, industry stakeholders, utilities, and the provincial government, BC's Energy Step Code sets the gold standard for progressive building codes that drive substantial energy savings and climate leadership, serving as a model for other regions aiming to boost energy performance and achieve decarbonization.

205 Government of British Columbia. 2021. BC Energy Step Code. Building & Safety Standards Branch.

The federal government can lead by example through the Greening Government Strategy

The federal government has the largest holdings of real property in Canada, including 38,870 buildings totalling 27.6 million square metres of floor space.[206] With these substantial holdings, the federal government is in an excellent position to lead by example. The Federal Greening Government Strategy has already been put in place to initiate that effort and to position the federal government as a global leader in net-zero property management and operations.

Although the strategy identifies key objectives for improving the environmental performance of real property assets and operations, it exhibits important deficiencies in terms of coverage, reporting, and the sharing of best practices. For example, the strategy does not outline a reporting framework to assess performance. And although it applies to the most relevant federal departments, it does not apply to federal Crown corporations (including ports and airports), which represent 13 percent of federal real property holdings.

206 Treasury Board Secretariat. 2024. Directory of Federal Real Property.

RECOMMENDATION 26:
Update appliance and equipment standards

The Council recommends that the federal government expedite the development and adoption of energy efficient products by: 1) modernizing Canada's Energy Efficiency Act and regulations, to enable include "smart" appliances and equipment that enable peak demand management, as well as aligning with the United States and including the avoided system costs associated with energy savings in standard decision-making; and (2) supporting the updating, expansion and adoption of voluntary product performance standards, including the ENERGY STAR Canada program.

Implementation Details

The Council recommends that the federal government:

A. Revise current energy efficiency regulations to:

i. Enable flexible loads by standardizing requirements for inter-operability of key equipment and appliances with smart devices and controls;

ii. Expand the reach of the regulations to enable the requirement of heating functions in central air-conditioning units where cost-effective; and

iii. Minimally align with U.S. standards on most appliances, except on heating and related equipment where Canada's specifications merit enhancements.

B. Amend the Energy Efficiency Act to create the tools to integrate the value of avoided long-term investment costs under a net-zero scenario into standard-setting and cost-benefit analyses.

C. Maximize the use of energy efficiency standards above regulatory requirements in appliances and other energy-using products. This can be done by updating and expanding voluntary product performance standards, including the ENERGY STAR Canada program. To spur adoption, the federal government could also provide guidance or financial support to Canadian manufacturers to become ENERGY STAR-certified for products that achieve higher efficiency standards than those required by regulation, giving them a competitive advantage.

What can provinces and territories do?

Provincial and territorial governments and other users can adopt policies to promote the purchase of ENERGY STAR-certified products. Provinces, manufacturers, and standard-setting agencies can collaborate on the development of the Energy Efficiency Act legislation and regulatory changes.

The private sector also has an important role to play. Manufacturers can improve the energy efficiency of their products beyond the Energy Efficiency Act Regulatory requirements and have them ENERGY STAR-certified to improve competitiveness and electricity performance.

RECOMMENDATION 27:
Advance building code modernization

Noting that the 2024 federal budget proposes funding for building code modernization , the Council recommends that the federal government modernize the National Building Codes under the Green Building Strategy to incorporate more ambitious requirements for existing technology, energy efficiency and climate resiliency, while providing increased financial and other support to provinces and territories for code adoption.

Implementation Details

The Council recommends that the federal government:

A. Modernize the NMBC to reflect existing technologies and practices and incorporate more ambitious model code requirements, while simplifying and harmonizing those requirements. Ensure that the NMBC maximizes its incorporation of energy efficiency and climate resiliency co-benefits, including for heating and safe indoor temperature limits. In particular, it will be important for the updated code to:

i. Value the emissions-reduction benefits of efficient electric equipment in new buildings; and

ii. Value the full stack of benefits to power systems, customers, and emissions reduction goals from grid-interactive energy efficient buildings, especially for reducing peak demands, integrating variable renewable power, and improving grid reliability.

B. Enhance the Codes Acceleration Fund program to provide increased financial and other support to provinces and territories to encourage adoption of the codes or high-level code tiers by expanding program content and expanding available funding.

C. Expand the capacity of the Canadian Board for Harmonized Construction Codes to develop new climate mitigation and adaptation provisions for the 2030 code cycle.[207]

D. Leverage investments made by the CIB to provide support for more stringent codes and ensure future-proof developments and retrofits meet net-zero and climate-resilient codes and standards.[208]

What can provinces and territories do?

Provinces and territories can adopt the regulatory standards of robust building codes to ensure new housing is built to be net-zero, climate-resilient and future-proof. Municipalities can support building decarbonization through implementation and other policies such as land-use planning.

207 Recommendation adapted from: Task Force on Housing and Climate. 2024. Blueprint for More and Better Housing.
208 Recommendation adapted from: Affordability Action Council. 2023. Retrofit Reset: Prioritize Low-Income Households. Institute for Research on Public Policy.

RECOMMENDATION 28:
Expand the Greening Government Strategy

The Council recommends that the federal government: i) enhance its Greening Government Strategy to mandate participation by Crown corporations and other agencies and properties not currently covered; ii) integrate Mandatory Building Performance Standards and accelerate implementation of green procurement; and iii) improve progress reporting and sharing of best practices.

Implementation Details

The federal government should:

A. Mandate federal Crown corporations and other government entities to participate in the program if not currently covered and provide additional financial support for implementation if required.

B. Integrate Building Performance Standards into the Greening Government Strategy to lead by example, while proactively mitigating risks.[209]

C. Improve progress reporting, including for regional-level data and for emissions from Crown corporations and procurement, in order to better communicate results to Canadians. Share best practices with subnational governments and other institutions across the country.

D. Adopt a systemic approach to set milestones for performance and progress monitoring.

What can provinces and territories do?

Provinces, territories, and municipalities can enact, implement, and accelerate similar strategies in their own jurisdictions (as some already have) to lead by example and leverage operational spending, procurement, and other activities to maximize environmental performance and energy efficiency. This can include Crown corporations and other government agencies as appropriate.

209 Mandatory Building Performance Standards (MBPS) are an emerging outcome-based mechanism focused on reducing environmental impacts of the worst-performing buildings by establishing minimum performance levels for energy and emissions and setting targets that increase over time. According to Efficiency Canada, a typical MBPS policy "includes a comprehensive framework with defined scope and exclusions, designated metrics, and prescriptive and performance pathways to achieve specific objectives." (Driving Climate Action, Efficiency Canada and Carleton University, 2024).

APPENDICES

APPENDIX A: ENERGY PLANNING

Suggested Features for Energy Planning Instruments

The following appendix outlines suggested features of energy agency mandates and instruments such as pathway assessments and energy roadmaps. As noted in this report, clarity on vision can guide sector stakeholders in the administration of their duties and support their access to support mechanisms.

For many key public institutions in the electricity sector, it is their provincial or territorial governments that would be making use of these suggested features. The features do not constitute official or mandatory requirements and are meant as suggestions to support the development of these instruments. The Council is providing this as a working aid, while strongly acknowledging the authority and jurisdiction of provinces and territories to administer their agencies according to their constitutional rights.

Energy Roadmaps

SUGGESTED FEATURES FOR ENERGY ROADMAPS

Definition:

An energy roadmap can be defined as a comprehensive strategy or high-level plan authored by a provincial or territorial government that guides the development of a net-zero energy system. It should provide a clear articulation of the overall vision and objectives that the government is planning for the energy transition, while putting a focus on the priority actions required in the near term.

Core Principles of Energy Roadmaps

The Council recommends the following guidelines on scoping for a successful roadmap:

1. **Centre net zero**. Clearly articulate a 2050 net-zero or carbon-neutral objective in the energy roadmap. This objective should also be reflected in the legislation and directives that articulate the mandate for regulators, system operators, permitting and approvals authorities, and Crown utilities (See Recommendation 4 on page 82).
2. **Clearly articulate the government's vision, objectives and actions.** Set out a clear picture of the objectives that inform the roadmap, outcomes that the roadmap is trying to achieve by 2050, five-year milestones along the way, and regulated near-term actions.
3. **Provide regular updates.** Ensure the roadmap, and the priorities it sets out, are updated at least every five years. (Where new solutions or options emerge between updates, governments should retain the ability to issue related directives or targeted changes to roadmaps.) This will be critical to ensure roadmaps stay action-oriented, drive specific needed changes, and remain relevant to the evolution of the energy system.
4. **Ensure alignment across energy system actors.** Require responsible entities or agencies to publicly report no less than biannually to the provincial or territorial government to outline how they are supporting the jurisdiction's net-zero energy vision and identify both progress and barriers to inform ongoing policy-making from provincial governments.
5. **Modernize energy governance and regulation.** Identify and provide direction on key reforms necessary to evolve existing energy governance and regulatory frameworks to align with the achievement of a net-zero energy system.

6. **Scope to include all energy systems.** Provide direction on the necessary action and reforms for the full energy system (e.g. both electricity and gas systems), promoting integrated planning and resource deployment and tackling the full domestic energy mix that will be required in 2050. Energy exports to other countries can be considered out of scope for a roadmap.

7. **Develop a participatory engagement process.** Ensure that Indigenous rightsholders, key stakeholders, and the broader public have the support and resources to meaningfully participate in developing the energy roadmap, and the opportunity to inform the regular updates that take place.

8. **Conduct regular evaluations of actions**. In addition to five-year milestones and periodic updates to the roadmap, the government should commit to transparently reporting back no less than biannually to transparently review the actions outlined in the roadmap and provide updates on progress.

9. **Identify and plan for labour market needs.** Outline the expected scale of labour requirements to support the energy roadmap, including specific measures, funding and collaboration with labour organizations that will help ensure adequate training and availability of the required skill sets.

Advice on objectives and actions

The following advice identifies some of the core issues that should be addressed within an energy roadmap to provide the necessary certainty to energy-system actors and other stakeholders. While energy roadmaps should be specific, they are intended to guide — not substitute for — the more detailed work of system planners, utilities, and regulators.

1. Provide direction on the extent and timeline of electrification in sectors including transport, industry, and buildings, reflecting the best available information about cost-effective decarbonization pathways, and leveraging pathway assessment and other modelling insights where possible.

2. Provide clarity on the desired pace of electricity system decarbonization, the anticipated scale of load growth, and guidance, where possible, on specific sectors that will require non-electrification pathways (e.g. industries or transportation end-uses that may emphasize consumption of hydrogen or renewable natural gas).

3. Where applicable, provide broad intentions around generation mix and clarity around which generation technologies the government wants to play a role (and which it wants to avoid). (In some jurisdictions, this clarity may relate more to how market or procurement design should harness market forces to drive the generation mix.)

4. Identify priority geographies for specific infrastructure investments, including high-level timelines.

5. Prioritize and scale up the integration of energy storage, DSM, and DERs, outlining strategies to address the regulatory and policy barriers and ensure their inclusion as a resource class.

6. Signal intentions around inter-regional collaboration and integration, including establishing processes to explore and expand inter-regional transmission.

7. Define and use metrics and targets to measure progress (e.g. emissions, emission intensity, electricity as a share of end-use capacity expansion potential).

8. Where pathway details remain uncertain or absent, detail when more specific decisions can expect to be taken and the conditions and outcomes that will guide decision-making.

9. Where appropriate, provide guidance on how utilities and regulators should ensure affordability and fairness (especially for low-income, marginalized, and rural communities), and outline the role that government policy will play. Provincial and territorial energy roadmaps can articulate a range of acceptable rate impacts. This range does not represent presumptive approval but signals to regulators that, if all other aspects of a proposal serve the public interest, bill impacts within the range should not solely justify the rejection of an application.

10. Clearly outline the role of public engagement in informing and implementing the energy roadmap. This should include:

    a. Public participation in the government's energy roadmap development;

    b. Proactive Indigenous engagement and commitments to advancing reconciliation and equity; and

    c. Details regarding how community participation should fit into utility planning and regulator decision-making.

11. Include direction to address climate change impacts, for example by enhancing the adaptation and resiliency of electricity infrastructure and operations, for example.

12. Provide direction to share data and information with counterparts in other provinces and territories.

13. Provide an assessment of labour market implications, including projections for labour requirements needed to undertake the building of infrastructure and other actions described in the roadmap. Provide clear guidance, funding commitments, and actions for collaboration with unions, industry, and training institutions to ensure workforce availability, retention and expansion. Also consider developing specific mechanisms to ensure labour availability, such as Project Labour Agreements.

Pathway Assessments

SUGGESTED FEATURES OF A PATHWAY ASSESSMENT

Definition

Pathway assessments can be defined as studies of the available and credible pathways for achieving a net-zero economy by 2050. Their development is fundamental for achieving an orderly energy transition, helping to evaluate choices and trade-offs, identifying priority actions, and bringing key stakeholders together to have evidence-based discussions and build a shared understanding about the future of a jurisdiction's energy mix[210].

Best Practices

Governments looking to establish pathway assessments as a core piece of their strategy for navigating the energy transition should consider the following best practices:

1. **Exhaustive:** A pathway assessment should consider all credible net-zero pathways as scenarios, regardless of established technology or pathway preferences, accounting for the inherent uncertainty of the transition. This could be accomplished by commissioning a pathway assessment from independent experts or by undertaking a government-led effort that is inclusive of all potential scenarios and considers uncertainties such as technology costs and availability as well as global climate action and oil prices.

2. **Comprehensive:** The assessment's modelling should include an evaluation of the greenhouse gas emissions associated with all aspects of the economy, including the interactions between all types of energy (not exclusive to electricity).

3. **Transparent:** Model selection, scenario design, and the selection of inputs and assumptions should be done transparently, with the outputs from all considered scenarios available for public scrutiny.

[210] Pivnick, E., Doran, R. and Kyriazis, J. 2024. Modernizing energy sector planning and oversight for a net-zero world. Clean Energy Canada.

4. **High-level**: A pathway assessment should not seek to replace more detailed electricity system planning and modelling conducted by system operators and utilities (which, for example, will have more detailed representation of resource adequacy, operability, and transmission requirements). For example, an economy-wide pathway assessment can use the more detailed modelling specific to a given power system, region, or sector to enhance the inputs and assumptions it makes in consideration of different scenarios.

5. **Recurring**: To ensure a jurisdiction's energy strategy remains relevant, a pathway assessment should be recommissioned on a regular schedule (most likely in the range of every 2.5 to 5 years). This allows for the inclusion of new scenarios and the consideration of changes in technology costs and availability, macroeconomic changes, and evolving insights from more detailed modelling that looks at specific sectors, technologies, and regions.

6. **Consultative:** It is critical to be thoughtful about the data inputs, scenario design and assumptions employed in a modelling exercise. Many choices or assumptions are highly subjective and should be determined in consultation with local subject matter experts and stakeholders (including electricity system regulators, energy utilities, government officials, labour and civil society organizations, consumer interest organizations, and municipal and external policy experts), as well as Indigenous rightsholders.

Advice on modelling scope

The Council advises the following when commissioning or undertaking a pathway assessment.

It should:

1. Be defined by an economy-wide modelling exercise, which assesses potential energy demand from all sectors across a set of established and credible scenarios that explore all the credible pathways to reaching net-zero;

2. Provide sufficient evidence to inform decisions and evaluate solutions that achieve emissions targets while prioritizing cost-effectiveness;

3. Be conducted with sufficient consideration, granularity, and treatment of the electricity sector, whether in the assessment itself or though separate utility modelling (and ideally both), to inform future iterations of the assessment. This involves facilitating an understanding of peak demand impacts, distribution and transmission impacts, operability, and resource adequacy needs;

4. Include a representation of energy trade with extra-provincial jurisdictions (assumptions used to determine this representation should be determined in consultation with trade partners). This may be accounted for in scenario design and assumptions to represent the availability of imports and demand for exports;

5. Include a representation of key macroeconomic influences, such as assumptions on global energy prices, population growth, stringency of global climate policy, interest rates, etc.;

6. Consider financial decision-making and behaviourally realistic choices, such as accounting for market heterogeneity and consumer preferences;

7. Be capable of representing current and emerging abatement pathways, including fuel switching and fuel blending, energy efficiency, DSM, DERs, energy storage, carbon capture and storage, process emission management, and low-carbon industrial processes. The model should also account for declining technology capital costs through learning-by-doing and economies of scale;

8. Provide results on an annual basis through 2050; and

9. Account for the impacts that a changing climate has upon the availability of different resources and the cost implications of weather events (and the corresponding spending on enhancing energy system reliability and resiliency).

Advice on scenario creation and analysis

The Council advises the following in the design and analysis of scenarios for pathway assessment:

1. Use a combination of descriptive and normative scenarios to explore pathways to achieving net-zero emissions.

2. If taking a descriptive approach, wherein the goal is to model existing and future policy and technology interventions, and describe their impact on the energy system transition:

    a. Model a baseline scenario that includes existing federal and provincial/territorial policies;

    b. Compare the baseline scenario to one that builds on and increases the ambition of existing policies in order to achieve net-zero emissions by 2050; and

    c. Continue adjusting the policy and technology assumptions of the ambitious scenario until it achieves net-zero emissions in 2050.

3. If taking a normative approach, wherein the goal is to set an emissions target and understand pathways by which that target can be achieved:

    a. Model a baseline scenario that includes existing federal and provincial/territorial policies; and.

    b. Apply emissions constraints (i.e. net-zero by 2040, 2045, or 2050) and observe how each economic sector evolves in response.

4. Assumptions to inform scenario design should be internally consistent within each scenario. For example, in a scenario where it is assumed that net-zero targets will be achieved at a global level, demand for fossil fuels should be low and commodity prices should reflect this.

5. There are many uncertainties associated with the technologies and resources that will play a role in transitioning the economy to net-zero. Sensitivity analysis should be performed in modelling exercises to account for and understand how these uncertainties impact pathways. The following parameters are associated with significant uncertainties and should be tested and scoped within different scenarios to ensure adequate sensitivity analyses:

    a. Costs and timing of market availability for emerging technologies such as hydrogen end-use technologies, small modular reactors, and direct air capture;

    b. Technology adoption rates, including co-generation and other distributed supply;

    c. Constraints on biomass supply and other fuel supplies, and limits related to labour supply or supply chains and related to specific technologies, as relevant (direct air capture, carbon capture and storage, etc.)

    d. Demand for exports by the United States and other countries for energy and products, including electricity, oil, liquid natural gas, hydrogen, metals, and minerals, especially as production processes become increasingly electrified;

    e. Domestic policy, including announced federal policies and announced policies in other provinces and territories; and

    f. Global climate action and global oil prices, as they have an important impact on Canada's oil and gas sector.

Advice on outputs and metrics

To be useful for informing policy decisions and providing information to key stakeholders such as system operators, the following metrics should be included in the reporting of model outputs in each scenario examined:

1. Final energy consumption by fuel type in each economic sector;

2. Annual and cumulative greenhouse gas emissions by sector;

3. Total discounted system costs for energy systems;

4. Economic impacts (such as GDP);

5. End-use technology market shares in each economic sector (e.g. percentage of electric vehicles in the transport sector or heat pumps in the building sector);

6. Timing, scale and mix of capacity additions (including generation, transmission, and storage) in the electricity sector;

7. Electricity generation by type; and

8. High-quality representation of different load profiles and implications for system needs (e.g. archetypal days).

Updated and Clarified Mandate Reforms

SUGGESTED FEATURES OF UPDATED AND CLARIFIED MANDATES

Definition

The modernization of the regulatory and governance frameworks that oversee the operation of energy regulators, utilities and system planners is an important measure for achieving the pace, scale and innovation required to cost-effectively navigate the energy transition while achieving climate targets.

Core Principles

Governments can consider the following core principles when looking to modernize the regulatory and governance frameworks that oversee their energy systems[211]:

1. Net-zero energy objective: Build new objectives into the enabling legislation and directives for regulators, Crown utilities system operators, and permitting and approvals authorities that require the consideration of climate targets in the regulation, management, and operation of the energy system.

2. Comprehensive energy regulation: Ensure the coordination of energy system planning across different energy sources (including electricity and natural gas, as well as emerging sources like hydrogen). This may require a single regulator to have purview over all regulated energy sources.

3. Enable responsible and flexible regulatory frameworks: Ensure regulators, system operators and utilities can embrace innovative approaches and technologies to deal with uncertainty and deploy the necessary resources at the pace and scale required. Regulators will need to articulate innovative frameworks that can be relied upon by regulated entities to submit proposals for the above-average investments required for net-zero energy (e.g. the Ontario Energy Board's Custom Incentive Rate-setting, multi-year cost of service applications), supporting the deployment of new technology, and building out supply and supporting infrastructure in advance of demand.

4. Reporting: Require regulators to publicly report no less than biannually to the provincial or territorial government to explain how their decisions and processes are aligning with the province's net-zero energy roadmap. Regulators should also report on challenges or barriers to implementation, which can support improved policy-making from governments.

5. Facilitate deployment of demand-side solutions and non-wire alternatives: Direct regulators, system operators, Crown utilities, and permitting and approvals authorities to embrace new market instruments, regulatory frameworks, and approaches to cost-benefit analyses that facilitate cost-effective deployment of demand-side solutions and non-wire alternatives.

Advice on regulatory and governance reforms

Governments can undertake the following actions to help ensure their energy governance and regulatory frameworks are aligned with the achievement of a net-zero energy system by 2050:

1. Review roles and core mandates of regulators, system operators and Crown utilities

    a. Working with regulators, system operators and Crown utilities, ensure mandates clearly reflect the achievement of net-zero planning objectives, and advance directives or legislation where required to ensure their actions, decisions and policies are consistent with achieving emissions targets.

[211] Based on a study of five jurisdictions (the UK, Germany, Denmark, Australia and NY State) carried out by NRCan to support the deliberations of the Council, ii) Pivnick, E., Doran, R. and Kyriazis, J. 2024. Modernizing energy sector planning and oversight for a net-zero world. Clean Energy Canada, and iii) feedback from the Council's consultation process.

b. Ensure the distinct roles and responsibilities of regulators, system operators, utilities and the government are clearly defined and that they are properly empowered and resourced to undertake this work.

2. Prioritize integration across energy sources

   a. Review regulator mandates and governance structures to ensure regulator purview is extended to include emerging energy types (renewable natural gas, hydrogen, district heating, compressed air, etc.).

   b. Provide guidance on how regulators should manage planning and regulation of gas and electric utilities (and their integration and/or competition).

   c. Instruct regulators to undertake integrated reviews and approvals that consider overall infrastructure development needs, in order to provide a coordinating and integrating function.

3. Establish frameworks that support and foster innovation

   a. Require regulators to articulate the responsive regulatory frameworks that can be relied upon by regulated entities to submit proposals for the above-average investments required for net-zero energy.

   b. Direct regulators to establish processes and provide guidance for non-standard submissions, the types of applications to be used with each process, and the processes for applications outside of regular submission cycles, where appropriate.

4. Enhance transparency

   a. Require regulators to publicly share core assumptions used in submissions (e.g. assumed economic and population growth) and in application reviews and decisions, to support transparency and standardization.

5. Strengthen coordination between regulator, system planning and relevant government agencies to expedite project reviews

   a. Provide direction to liaise with concierge services that facilitate other aspects of project reviews and assist with the identification of priority projects that require immediate review.

6. Innovate in rate structures and market design

   a. Direct regulators and utilities to enact rate structures that incentivize electrification (and at a minimum do not discourage it).

   b. Direct the identification, consideration, and pursuit of market design reforms (in jurisdictions where applicable) to support net-zero-aligned resource deployment.

   c. Direct regulators to consider all available resource options, including DSM, DERs, energy storage, emerging technologies, and hybrid options and to capture the full value they bring to the system.

7. Embrace new evaluative tools and ensure alignment between energy roadmaps, pathway assessments and system planning processes

   a. Direct regulators to request and secure broad cost-benefit analyses (including cost of inaction, avoided cost of emissions, and non-wire alternatives) by:

      i. Providing guidance and rules on cost-benefit analysis;

      ii. Requiring that submissions use them; and

      iii. Having regulators scrutinize the findings for themselves.

   b. Provide resources for regulators to proactively and continuously reconcile outputs from pathway assessments to more spatial and technical models used by system operators and utilities.

8. Support enhanced data security and sharing

   a. To facilitate data sharing across jurisdictions and manage the widespread deployment of distributed resources, governments should direct regulators to require utilities and system operators to prioritize investments in digitalization of their systems and provide support for collaborative and secure data-sharing frameworks.

APPENDIX B: WHAT THE COUNCIL HEARD

This appendix summarizes the input that the Council received in the written submission process and supplementary virtual roundtables conducted during its external engagement process. Stakeholder and partner feedback provided useful insight to inform the Council's recommendations for the development of electricity policy. The written submission process took place from December 2023 to January 2024 and solicited submissions through a Discussion Guide sent to 350 organizations and posted publicly. The Discussion Guide consisted of 28 questions that aligned with the Council's five working groups:

1. Improving planning and oversight of electricity systems to support net-zero
2. Building electricity infrastructure in a timely manner, while creating benefits for Indigenous partners
3. Attracting capital investments and maintaining electricity affordability through the transition
4. Enhancing regional cooperation to take advantage of efficient, low-cost pathways to net zero
5. Enabling electricity sector innovations while maintaining grid reliability and resiliency

Stakeholders were able to choose which questions to respond to. To avoid engagement fatigue, the Council analyzed and incorporated previous and ongoing engagements that NRCan has conducted and evaluated using the parameters of the Council's engagement process. Initiatives reviewed included Regional Energy and Resource Tables (2023), National Benefits-Sharing Framework with Indigenous Peoples (2022-23), Green Buildings strategy consultation (2022), Innovation in Electricity Regulation Initiative (2022-23), Generation Energy (2017), and Utility Advisory Committee and related engagement for Northern and remote communities (2020-2022).

Who The Council Heard From

In additional to 66 virtual and in-person meetings with stakeholders, the Council received 72 written submissions from electricity stakeholders representing every province and territory across Canada. Given the complexity of some of the questions that the Council asked as part of the Discussion Guide, one stakeholder was invited to supplement its submission, and two others were invited to discuss their perspectives at a virtual session (in lieu of a supplementary submission) to deepen the Council's understanding of their perspectives.

Written submissions and related sessions by stakeholder type	
Governments (including agencies, Crown corporations and advisory bodies)	8
Utilities, Regulators and System Operators	16
Independent Power Producers and related associations	9
Indigenous Organizations	6
Labour Organizations	4
Industry Users	7
Energy Non-Governmental Organizations (e.g., Other associations, think tanks)	16
Academics	3
Individuals	5
Total respondents (written submissions and related sessions)	74

Highlights: What We Heard

At a high level, the majority of feedback indicated general alignment with the Council's discussions on its major lines of inquiry. Since not all respondents answered all questions, the numbers below indicate a high level of mention by respondents. Key areas emphasized included:

- Net-zero mandates for regulators: Nearly 40 percent of respondents noted the need for updated mandates for utilities and regulators, emphasizing the importance of including net-zero goals and often highlighting the need for additional mandate changes (e.g. DSM and DER integration, such as adoption of a Total Distribution Operator model; adopting performance-based regulation and alternative models to cost-of-service). Only seven respondents, notably some governments and utilities, opposed changes; of these, most stated that current mandates were sufficiently flexible.
- Net-zero roadmaps and pathway assessments: More than 30 percent of respondents mentioned the need for provincial and territorial net-zero roadmaps and pathway assessments; many suggestions were made on elements they should include. Some respondents also stressed the need for policies to align with internationally determined and science-based emissions targets. A strong theme, particularly from governments, utilities, and regulators, was that the federal government will need to be mindful that pathways will differ significantly between jurisdictions.
- Accelerating project approvals: More than 30 percent of respondents emphasized that current approval times are too long and provided suggestions for acceleration. At least ten respondents noted concerns about unintended consequences with accelerated approvals for Indigenous inclusion, social license, and public engagement.
- Prioritizing energy efficiency and DSM: Many respondents noted the need to manage affordability during the transition. Around one-quarter of respondents cited energy efficiency and DSM as areas needing increased support; several respondents expressed a desire for this to be embedded in regulator and utility mandates.
- Easing the cost impact on ratepayers: The majority of respondents were in favour of a publicly funded approach to help shift a portion of electricity transition costs away from ratepayers. Many reasons were cited, including the observations that the benefits would be society-wide and that taxpayer support can help more equitably distribute costs and is critical for areas where ratepayer funds are less common (such as supporting early-stage innovation). At least 13 respondents made specific recommendations on expanding the recently announced ITCs, although policy requests varied. Several respondents called for higher thresholds for government funding programs and more open-ended or multi-year options.
- Improving regional cooperation and planning: Nearly half of respondents expressed support for increased regional cooperation and a role for the federal government to facilitate it. Only three respondents opposed increased regional cooperation or a role for the federal government.
- Conditionalities on federal funding: At least 16 respondents indicated a strong desire for conditionalities to be applied to federal funding for electricity, not necessarily exclusive to the ITCs. Suggested conditionalities focused on the provinces and territories and varied significantly (commonly cited conditionalities included requiring DSM plans and all cost-effective energy efficiency solutions, full participation of Indigenous peoples in planning, and accelerating approvals processes). Some suggested conditionalities focused on project proponents (such as partnering with Indigenous partners or committing to best-practice public engagement). A smaller number of respondents (seven) opposed conditions on funding, primarily from utilities and industry.

Other topics that were consistently mentioned for federal policy action included: convening provincial/territorial and electricity sector actors; providing guidance on best practices (e.g. for mandates, data, and modelling); improving federal data

collection and modelling; supporting regulatory and technology innovation through mechanisms such as innovation sandboxes, support for research and development, and knowledge-sharing; providing additional support for DERs; supporting customer participation in the electricity grid, including local and community ownership of projects, funding for technical and planning support for communities, and customer education; and prioritizing certain types of net-zero-aligned projects for approvals (such as proven low-risk technologies).

FEEDBACK ON INDIGENOUS INCLUSION AND BENEFITS

Many respondents – including utilities, electricity producers and Indigenous organizations — commented on Indigenous-related electricity issues. Most submissions expressed support for an ILGP, but also emphasized that such a program on its own would be insufficient to ensure Indigenous economic participation, since many communities may not currently have the fiscal or human-resource capacity to advance projects under such a mechanism. There were strong calls for additional forms of federal support, including grants, low-interest debt financing, direct investments into capital costs, discretionary funds to leverage third-party expertise, and support for feed-in-tariffs. Indigenous respondents emphasized that current funding mechanisms could be more accessible through stackable funding, more flexible funding outcomes, and the ability to use project funding for capacity-building, training, and project development. As one respondent noted, "It is important to recognize that Indigenous communities' full participation in electricity projects is often hampered by the slow and iterative processes used by governments and financial institutions to deploy capital."

FEEDBACK ON THE ELECTRICITY TRANSITION IN THE NORTH

Northern respondents emphasized that net-zero and related technology and planning decisions in the rest of Canada have deep ramifications in the North. As one respondent noted, "The transition is not just a dollars-for-carbon calculation. The cost of not participating in the changing economy, and not being included in the transition, despite the North suffering disproportionately from climate change, needs to be recognized." Northern respondents expressed concerns about keeping up with the transition and noted that policy exemptions for the North at both federal and provincial levels are not helpful signals, especially if alternative measures to meet similar goals are not put in place. While acknowledging progress on existing programs, respondents stated that, overall, little movement has been made to make sufficient funds available for the North to align with the 2035 goal for net-zero electricity. They emphasized that decision-makers (including governments, utilities, and regulators) are not currently considering the "true" cost of diesel fuel in decision-making. Respondents also emphasized the vital role of the federal government in supporting financing, as project development is currently led by organizations that are limited in capacity and fiscal resources. Regional collaboration was mentioned as a clear opportunity for the federal government to facilitate, whether for interties, planning and knowledge-sharing, bulk materials procurement, or otherwise.

Additional Feedback

Respondents also raised issues that they felt were critical for the Council to consider but were outside the scope of their recommendations. They are listed here to reflect responses and emphasize the importance of these topics receiving policy support to advance the electricity transition.

SOCIAL LICENSE

Social license was a strong theme raised in response to the Council's questions on project approvals. Nearly half of respondents, across stakeholder types, noted that community engagement, participation, and buy-in are fundamental to the electricity transition. Respondents stressed that public support is critical for project approvals and reducing delays, but also noted opportunities for local economic benefits. Commonly cited policy actions included: 1) providing fiscal support and guidance for communities to engage in and understand approvals; 2) providing guidance to proponents on best-practice engagement and benefit agreements; 3) incentivizing or requiring Community Benefit Agreements (as implemented in British Columbia, Nova Scotia, and New York); 4) embedding public participation in net-zero planning, project approvals and siting; 5) supporting community-level projects and planning (e.g. Community Energy Plans); and 6) working with municipalities on system planning, project development and siting.

LABOUR

About one-third of respondents, across stakeholder types, stressed the urgency of addressing workforce issues. Respondents noted that without proactive action focused on good quality jobs, Canada will face difficulty retaining and attracting workers in a globally competitive market. They also observed that the construction workforce is highly mobile, that advance planning is key to ensure successful projects, and that actions to support labour can increase investor confidence, social license, and diversity, equity, and inclusion outcomes. The three most cited policy actions were: 1) labour planning with unions to ensure availability and qualifications; 2) scaled-up investments in training and collaboration between industry, academic institutions, and unions on certification, with special attention to equity-deserving groups; and 3) encouraging adoption of Project Labour Agreements (similar to the U.S. Executive Order for PLAs).

SUPPLY CHAIN

At least 13 respondents cited the need to address supply chain issues by both supporting domestic action and leveraging global supply chains, although recommended policy actions varied significantly. The majority focused on supporting domestic supply chains and the commercialization of home-grown technologies, including providing grants, incentives, and support for business development of Canadian manufacturing capacity. Respondents noted that supply chains are a key bottleneck to electricity buildout, but if addressed correctly, could become a driver of economic growth.