Powering Canada's Future: A Clean Electricity Strategy

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Foreword – Clean Electricity Strategy

It is easy to see the urgent need for climate action wherever we look. Every year, as the world gets a little warmer, the extreme weather events only intensify – from deadlier heatwaves and more destructive wildfires and floods to mounting droughts and melting glaciers. The catastrophic impact is equally obvious. Rising death tolls. More climate-related health issues. And record financial losses and property damage.

One thing we sometimes fail to see in our changing climate is opportunity – not just to create a more sustainable natural environment but to transform our national economy; to launch entire new industries and reimagine existing ones, all while creating good, highly-

skilled, well-paying jobs in every sector of the economy and every region of the country.

The economic opportunity before us cannot be overstated. Climate action has the potential to be the biggest job-creator in modern Canadian history, and it's already happening. Our clean technology sector, alone, has been growing more than three times faster than the national average. According to the International Energy Agency's 2024 *World Energy Employment* report, the number of people working in the global clean energy sector has already surpassed those in the world's oil and gas industry. And these trends will only accelerate in Canada because our plan to fight climate change is also a plan to grow a strong and prosperous economy. Over the next five years, Canada's clean energy gross domestic product is projected to reach $107 billion – driven by some $58 billion in annual investments by 2030, and more than 600,000 jobs.

Climate *in*action, on the other hand, would represent an unprecedented threat to our economy, our jobs, and our very way of life. Our changing climate is already costing Canadians billions of dollars a year for everything from lost income to uninsurable property damage and massive repair bills for vital infrastructure. Summer 2024, for example, was the costliest season for natural disasters in Canadian history, with the bill pegged at more than $7 billion. Future inaction would raise that financial impact to the tens of billions of dollars annually by 2050, and then increase dramatically to more than half-a-trillion dollars a year in 2100.

We can avoid such devastating losses, and create a more sustainable, affordable future, by building a clean energy economy. A recent analysis of energy affordability – conducted on behalf of the Canada Electricity Advisory Council – confirms the potential savings. It found that Canadians would stand to reduce their total energy related costs by as much as $15 billion through the shift to a net-zero future.

What's more, we overlook this potential at our own peril. Around the globe, governments and financial markets are searching for long-term gains while steering away from assets and investments that will perform poorly in a low-carbon world. We are seeing it in the climate ambitions of key allied countries, and we are seeing it with major competitors, such as China. China is now the number one developer and user of renewable energy technology, one of the top developers and manufacturers of electric vehicles, as well as the largest market, and it controls many of the world's value chains for critical minerals. China has made a major bet on the clean energy transition, challenging the idea that our future prosperity lies in pursuing long-standing energy pathways that are being fundamentally disrupted as we speak. We cannot allow our competitors to take the lead in this important economic, geo-political, and social domain, and nor can we be reliant on authoritarian governments to power the economy.

Canada is enormously well placed to seize the opportunities of a low-carbon future to create wealth and prosperity in every province and territory, and to do so at a level rivalling the pace and productivity of industrial revolution, while protecting the environment. We have the resources of the land and the resourcefulness of our people to be a global leader in the industries and clean technologies of today and tomorrow – everything from critical minerals and processing to electric vehicles and battery manufacturing, to biofuels, nuclear energy, hydrogen, renewables and a range of technologies in which Canada leads, including carbon capture, use and storage. We also have the skilled workforce, human rights protections, and environmental standards to get it done right.

And it all starts with clean, affordable, and abundant electricity. A reliable, non-emitting electricity sector will serve as the backbone of a thriving, low-carbon economy. This *Clean Electricity Strategy*, the first of its kind in Canada, is our chance to build tomorrow's grids at the pace and scale needed to drive clean growth, strengthen our competitiveness, and attract more major investments. That is why this *Strategy* is as much an industrial roadmap for the next decade of Canadian business as it is a plan to leave a healthy home to our children, and their children.

But it is up to us to seize this moment – by working together. While electricity grids are largely the purview of the provinces and territories, the size of the challenges and opportunities we face will require federal support and sustained, effective partnerships between the two levels of government. We need to rally around this common purpose and collaborate thoughtfully, flexibly, and ambitiously.

Canada has a history of rising to meet great challenges. Let's see the building of clean, reliable, and affordable electricity systems for what it really is: the economic and environmental opportunity of our lifetime.

Jonathan Wilkinson, Minister of Energy and Natural Resources

Steven Guilbeault, Minister of Environment and Climate Change

1.0 The Case for Clean Electricity

In this section:

1.1 Laying Out a Clean Electricity Strategy for Canada

1.2 A Strategy informed by extensive engagement, electricity sector experts, and Indigenous energy leaders

1.3 Key Guiding Principles

Building a low-carbon future is the defining economic opportunity of this generation, and clean electricity is at its core.

Abundant, affordable, and reliable clean electricity will be the energy of choice to power national economies and the world's leading companies, including manufacturers making physical products, or large firms expanding the boundaries of Artificial Intelligence (AI). Canada, with one of the most reliable, affordable, and clean electricity mixes in the world, is already attracting significant investments in many of the industries and technologies that will drive the low-carbon economy because clean electricity is a strategic and competitive advantage. Canada needs to maintain and expand its position as a global clean electricity powerhouse in order to attract investment.

Expanding and transforming the electricity sector for a net-zero world will be a significant endeavour (Figure 1). Between 140 [1] and 190 [2] gigawatts (GW) of additional clean electricity generating capacity are projected to be needed by 2050. Modelling suggests that the incremental cost of ensuring that the build out is largely non-emitting would be small. Nevertheless, given the scale of expansion, the pace of investment in the electricity sector needs to double – or triple – compared to recent annual spending. The level of investment will be affected by a range of factors, including the maturity of emerging generation technologies as well as the evolution of electricity demand drivers such as heating, transportation, hydrogen, industrial and artificial intelligence applications. Integrating and modernizing transmission and distributions system infrastructure and operations will help reduce the volume of investment needed in generation assets. At the same time, transformation of the grid will change how we operate the system, increasing integration of lower cost renewable electricity, requiring new management approaches, regulatory reform, and wide-scale deployment of enabling technologies, such as energy storage.

By continuing to expand and decarbonize electricity systems, we will not only drive unprecedented growth and create good jobs, but we will also help to lower energy costs, reduce energy poverty, and ensure a more equitable energy future. Over the next five years, Canada's clean energy gross domestic product is projected to reach $107 billion – driven by some $58 billion in annual investments by 2030. [3] Shifting toward a low-carbon economy by 2050 is projected to create around 60,000 new job openings in our electricity sector alone from 2023 to 2050, including around 10,000 new job openings in the first five years. [4] Canada must continue to expand our diverse and skilled workforce to fill these jobs. This includes support for growing Indigenous participation and leadership in electricity projects, which can advance economic reconciliation and ensure no one is left behind. The majority of Canadians also stand to benefit economically from clean electrification, with independent analysis projecting that 84% of households will have lower overall energy expenses by 2035. [5]

Provinces and territories see this as well and are taking action to grow and decarbonize their grids. For example, each provincial and territorial government has already released, or is working toward, a clean energy or clean electricity strategy to meet net-zero commitments while prioritizing affordability and reliability. [6]. Jurisdictions are taking action to expand their capacity to produce clean electricity in response to growing demand and to avoid having to turn away potential job-creating investments due to a lack of sufficient electricity. This also includes collaborative efforts in the last year between the governments of Canada, Nova Scotia, and Newfoundland and Labrador to expand the offshore petroleum energy regulators' mandates to include renewable energy development, creating the enabling conditions for Canada's offshore wind industry, and the tens of thousands of jobs it could support.

The Government of Canada will work in partnership with provinces and territories, helping to establish supportive enabling conditions. Electricity generation, intra-provincial transmission, and distribution are areas of provincial and territorial jurisdiction. The federal role [7] includes regulatory authorities over interprovincial power lines – which are critical for moving clean electricity where it is needed most [8] – as well as nuclear power, electricity exports, and electricity sector emissions. The federal government also shares jurisdiction with provinces and territories on environmental regulations, such as those to limit greenhouse gas emissions from power generation, and plays a convening role to facilitate collaboration, mobilize support, and advance strategic policies [9] with a national perspective. Collaborative and forward-looking approaches to the planning, construction, and operation of the clean electricity systems, within and between jurisdictions, will be crucial for Canada to build on the extensive work already being done – by utilities as well as governments across the country – and better ensure the orderly, affordable, reliable transition that Canadians expect.

The Government of Canada also has a unique fiduciary responsibility to provide energy for on-reserve First Nations where electricity is not supplied by a provincial/territorial or local regional/municipal electric power utility, and a responsibility to support Indigenous-led processes and self-determination for First Nations, Métis and Inuit through mechanisms such as the duty to consult under the Constitution Act (S. 35) and the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) Act.

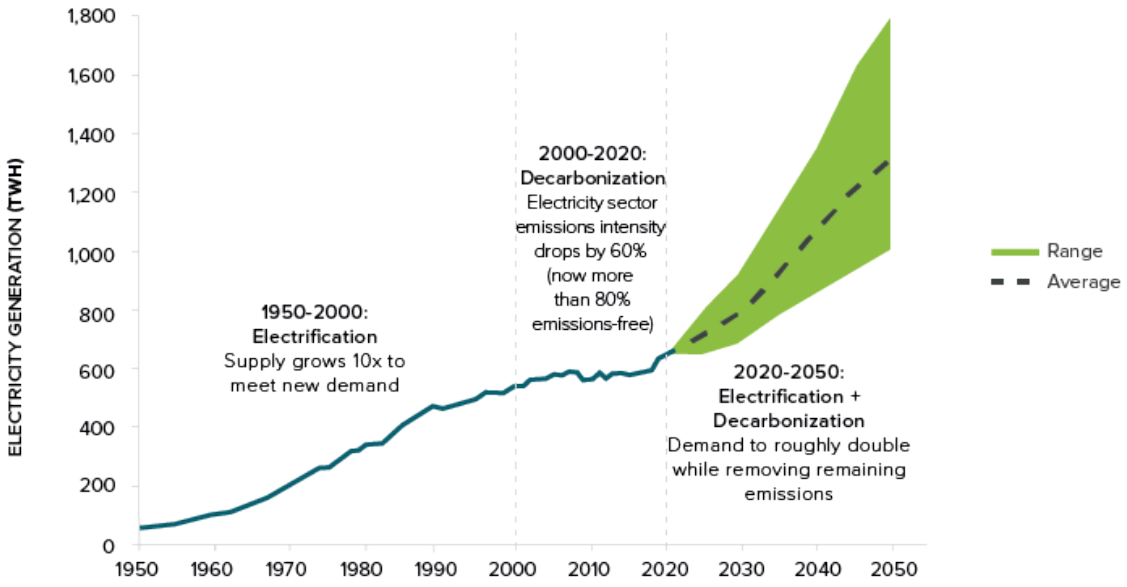
Flexible, differentiated approaches are required to meet each jurisdiction's needs and opportunities, particularly when working with communities and industry in the North. The North faces some of the country's most significant energy challenges, in particular related to energy security and reliability. Neither the Yukon, the Northwest Territories nor Nunavut are connected to the North America electricity grid. In Nunavut, each community has a "micro-grid" that relies on independent diesel-powered power plants. This is why the Government of Canada is working collaboratively with territorial

governments on energy policy and development. The federal government is equally focused on renewing relationships with Indigenous governments and organizations, and promoting sustainable economic development while respecting Indigenous rights, supporting critical infrastructure, safeguarding security, asserting sovereignty, and protecting the sensitive Northern and Arctic ecosystems. These efforts are necessary to continue to reduce the cost of living in the North and will promote new and emerging economies.

We must act swiftly and decisively. If Canada fails to take strong action to grow and decarbonize its grids while other nations do, we may find our country being passed over by investors. Global research indicates that other G7 countries are now moving to put in place the frameworks, processes, and technologies to successfully manage a grid based on higher amounts of variable renewable energy. At the same time, Canadians would face higher costs to meet their growing energy needs. Our country must work together to meet the moment and build on the electricity advantage established by previous generations.

Expanding and decarbonizing Canada's electricity sector requires an effort that will surpass the building of the national railway in the nineteenth century, while building on the lessons learned, including working collaboratively with Indigenous communities. Canadian leadership of that era understood that joining the new Confederation of provinces from the Atlantic to the Pacific with a railway was of critical importance to Canada's future, and our railways remain bands of steel that unite our economic fortunes. The expansion of the electricity sector will likewise link Canadians – this time with wires – in a way that benefits them from coast to coast to coast. The Government of Canada understands this and will do its part to advance this nation building opportunity that is in the interest of all citizens via the *Clean Electricity Strategy*.

Figure 1. 100 Years of Electricity Generation in Canada



Source: Canada Electricity Advisory Council, "Figure 1," *Powering Canada: A Blueprint for Success*, May 2024.

▶ Long Description

1.1 Laying Out a Clean Electricity Strategy for Canada

Clean, reliable, and affordable electricity is the backbone of a competitive, net-zero emissions Canadian economy in the 21st century, with growing supply attracting investment and creating good jobs.

With the release of the *Powering Canada Forward* vision paper in 2023, the federal government laid out the significant measures it has already taken to help build a clean, reliable, and affordable electricity sector. This includes, most notably, the Clean Electricity Regulations (CER), along with $60 billion to advance decarbonizing the electricity system as part of the Clean Economy Plan, primarily comprised of Clean Economy Investment Tax Credits (ITCs), Canada Infrastructure Bank (CIB) financing and targeted programming – including the Smart Renewables Electrification Program. In addition, the federal government has introduced other action plans and strategies to support electrification and decarbonization, including the *Hydrogen Strategy* (2020) and Progress Report (2024), the *Small Modular Reactors (SMR) Action Plan* (2020) and Progress Update (2022), and the *Canada Green Buildings Strategy* (2024). [10]

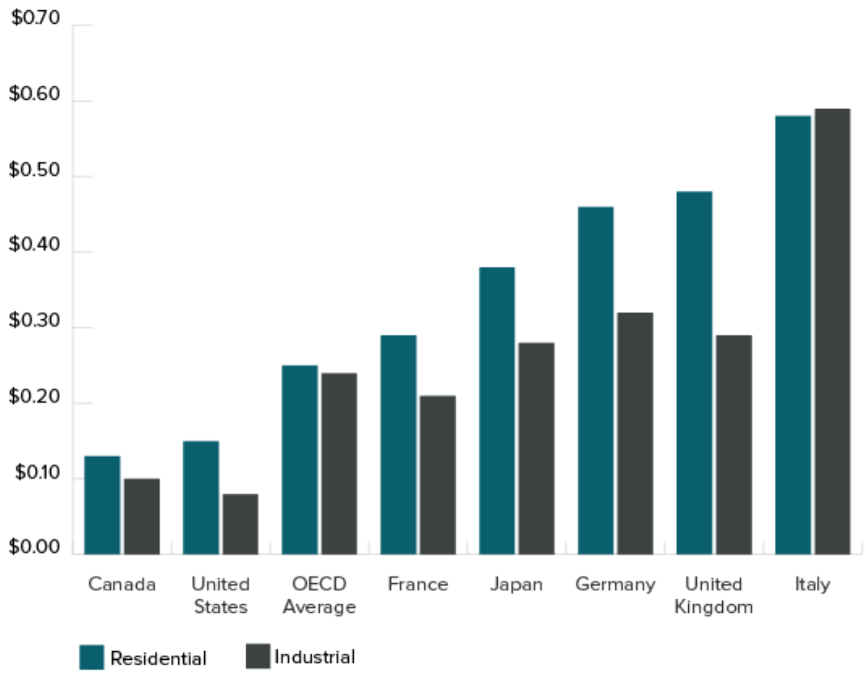
This *Clean Electricity Strategy* builds on this vision, articulating the federal government's role, focusing on three key areas:

- Growing the grid and managing demand;
- Providing policy certainty and smoothing the path; and
- Collaborating on tailored approaches for every region.

With one of the cleanest grids globally, Canadians also pay some of the lowest electricity rates in the world. According to the most recent figures available, Canada has the second-lowest residential and industrial rates among all OECD countries (Figure 2). This is a testament to the strength of Canada's electricity sector, which is already a leader in clean growth and reducing pollution. And still, there is potential to do much more for Canada and Canadians, all while lowering overall energy costs and increasing access to clean energy.

- Recent analysis from the Canadian Climate Institute found that switching to clean electricity will save households an average of 12% on their total energy spending in 2050. [11]
- A recent study conducted as part of the analysis for the Clean Electricity Regulations (CER) estimated that, after accounting for the impacts of the CER, 84% of Canadian households can be expected to save money from household electrification by 2035 as the financial savings from reduced fossil fuel use outweigh the increased spending on electricity. [12]
- Other analysis has shown that absolute energy expenditures for the typical Canadian household in a net-zero by 2050 economy – inclusive of all energy sources (i.e., electricity, gasoline, natural gas, etc.) – are expected to be 2% to 12% lower (in high and low electricity-rate scenarios, respectively). The same study, building on work conducted on behalf of the Canada Electricity Advisory Council, found that Canadians stand to save over $20 billion in total energy related costs through the shift to a net-zero future while current rates of investment in the country's electricity sector double. [13]
- Clean electricity can reduce the impacts of energy price volatility on households and the economy. [14] Shifting to renewables and clean electricity can reduce the impact of inflation and price shocks related to fossil-fuel dependency. [15] [16]

Figure 2. Electricity prices around the world (USD/KWh Purchasing Power Parity (PPP)-2022)



Source: Prices in USD/KWh PPP-2022. International Energy Agency (IEA), End Use Prices (2022).

▶ Long Description

1.2 A Strategy informed by extensive engagement, electricity sector experts, and Indigenous energy leaders

This Strategy was informed by ongoing engagement and consultation, including:

- The Canada Electricity Advisory Council's final report, *Powering Canada: A Blueprint for Success* (May 2024);
- The Wah-ila-toos Indigenous Council's report *Kinship and Prosperity: Clean Energy Solutions for Future Growth* (November 2024).
- Submissions received in response to the Government of Canada's Powering Canada Forward (August 2023) vision paper.
- Environment and Climate Change Canada's (ECCC) engagement on the Clean Electricity Regulations; and
- Ongoing engagement with provinces, territories, and Indigenous groups through the Regional Energy and Resource Tables [17] (or comparable dialogues), federal-provincial working groups, and the distinctions-based tables with First Nations people, Inuit, and Métis, as part of *Canada's 2030 Emissions Reduction Plan* (2022).

The Canada Electricity Advisory Council's advice has been an invaluable input to the *Clean Electricity Strategy*. The Council was an independent body of 19 experts with a one-year mandate (May 2023 to May 2024), which provided advice to the Minister of Energy and

Natural Resources for accelerating investments in sustainable, affordable, and reliable electricity systems. Its mandate covered reducing emissions in the electricity sector and rapidly growing the electricity generation needed to power a net-zero emissions economy by 2050. The Council's final report *Powering Canada: A Blueprint for Success* (2024) included 28 consensus-based recommendations to lower costs and move toward a clean power economy as rapidly and cost-effectively as possible. The Council's advice was instrumental in shaping the *Clean Electricity Strategy* and the majority of its recommendations are reflected in the Federal Actions identified in Section 3 of this report, with some specifically highlighted. The federal government will continue to draw on the report going forward.

- During its 12-month mandate, the Council heard from over 100 stakeholders, including provincial and territorial governments, Indigenous groups, industry, and civil society. Its recommendations focus on federal action that can enable a speedy, affordable, and reliable shift to a net-zero electricity grid while supporting Indigenous participation and economic reconciliation. The recommendations are intertwined and reinforce each other.
- Collectively, the Council's recommendations highlight the importance of clear and flexible federal rules and policies, efficient regulatory regimes, Indigenous participation, and project development, financial and coordination supports, energy efficiency and demand-response technologies, and codes and standards.

The Wah-ila-toos Indigenous Council and its advice has been a key source of insight to strengthen the *Clean Electricity Strategy*. As the culmination of its two years of work with Wah-ila-toos, the Council proposed more than 30 recommendations in its November 2024 report, *Kinship and Prosperity: Clean Energy Solutions for Future Growth*. The Wah-ila-toos Indigenous Council has influenced the federal government's consideration of issues related to Indigenous rights and opportunities, and the unique circumstances of Northern and remote communities. Its advice has shaped this Strategy and will continue to guide future decisions in the energy sector more broadly. Federal Actions responding to the Wah-ila-toos Indigenous Council's report are specifically noted in Section 3.

- Wah-ila-toos is an interdepartmental and collaborative network for coordinating policy development, engagement, and program delivery to reduce reliance on diesel power generation. Seven Indigenous clean energy leaders were invited to form an advisory council, which first met in December 2022.
- The *Kinship and Prosperity* Report focuses on six key themes: easing access to funding; developing consistent project eligibility criteria that prioritize Indigenous community benefits; advancing inclusive opportunities and a Just Transition; accelerating Indigenous leadership in the energy transition; respecting self-determination by prioritizing Indigenous-led decisions; and sustainably funding Indigenous participation.

1.3 Key Guiding Principles

Six key principles underpin the *Clean Electricity Strategy* and will guide federal action to support electricity grid decarbonization and expansion.

Principle 1: Provincial and Territorial Jurisdiction Must be Respected and Supported with Policy Certainty

Provinces and territories hold jurisdiction over electricity planning and operations within their borders, while the federal government regulates nuclear energy and international power lines, and acts within its jurisdiction to represent national interests, including by enacting regulations to reduce electricity sector emissions.

- Compounding the complexities of decarbonizing, modernizing, and expanding their electricity systems, each jurisdiction is also dealing with its own unique set of circumstances. To seize the clean electricity opportunity, the Government of Canada will continue to engage collaboratively with provincial and territorial governments. We acknowledge their leadership roles, as well as their diverse generation mixes, market structures, and industrial needs. We also recognize the trading relationships that influence their approaches. Flexibility is paramount.
- At the same time, a stable regulatory and policy environment is crucial for attracting investments in clean electricity projects and necessary to accelerate project timelines. The Clean Electricity Regulations provide a clear, long-term signal on the decarbonization trajectory of Canada's electricity system, providing the necessary certainty for sector investments. Tailored approaches, including using Equivalency Agreements for regulations, will allow for federal collaboration with provinces and territories on their priorities while ensuring that policy decisions are durable and guided by regional needs. This dual focus of respecting local jurisdictions, while implementing enduring policies, will facilitate the necessary transformative actions to the benefit of communities across Canada.

Principle 2: Electricity Must Remain Reliable and Affordable

Reliable and affordable electricity is a key determining factor in cost of living, quality of life, and the competitiveness of the economy.

- Providing power reliably, and at affordable rates, is critical to Canadian families' budgets, and preserving momentum and support for decarbonizing Canada's grids and enabling wide-scale electrification. The Government of Canada recognizes that provincial and territorial utility boards (i.e., economic regulators) have legislative mandates that focus on meeting near-term electricity demand and system reliability needs at the lowest cost to consumers. The federal government can help provinces and territories build new clean electricity infrastructure to grow the grid and maintain

reliability through financial and policy support, which in turn, can help mitigate rate increases associated with large capital investments.

- Current and future electricity systems must maintain and improve their ability to meet the aggregated demand for electricity at all times – without disturbances and interruptions – while being able to restore power rapidly after outages. To support these efforts, the federal government will leverage its convening role to increase collaboration and mobilize resources. [18]

Principle 3: Electricity Demand and Supply Must be Considered Equally

Reducing electricity demand through enhanced energy efficiency and conservation, as well as reshaping that demand to be more flexible, will play a key role in maintaining electricity affordability.

- From a system perspective, enhancing energy efficiency and demand flexibility can reduce the need for costly investments in additional generation capacity or transmission and distribution system upgrades, costs that would otherwise be passed on to ratepayers. Demand-side solutions and distributed energy resources can also offer ratepayers opportunities to generate, store, and manage their own electricity. These innovations can help lower electricity bills while contributing to more flexible and reliable energy systems.
- The federal government will adopt a holistic approach to its efforts, helping to adopt advanced and new technologies and capabilities, new regulatory approaches, and evolved business models to transform the system, while supporting good jobs in energy efficiency.

Principle 4: Canadian Industries, Investors, and Workers Must Have the Power Needed to Build Canada's Industrial Future

A growing electricity system with a low-carbon footprint is crucial to attracting investment to build more long-term manufacturing and other industrial projects that create good jobs and pay prevailing wages for Canadian workers.

- The Canadian workforce needs to see consistent growth in investment and low-carbon industrial development backed by clear targets and standards in order to plan their careers and access skills training, in support of building up Canada's power grids and the low-carbon industrial facilities that they will power. Canada has a number of effective pathways for developing the human resources talent needed for de-carbonizing Canada's electricity system - this includes unique not-for-profit, public education, and joint union-employer apprenticeship system for the skilled trades.
- International investors are increasingly seeking out low-carbon economic opportunities in industrial sectors, based largely on access to reliable and cost-competitive power supply from clean energy sources.

- Canadian industries across sectors are expecting continued access to a growing power grid in order to drive innovation and economic activity in every part of Canada.

  A growing low-carbon electricity grid can ensure workers continue to benefit from today's good, highly skilled jobs, including unionized jobs and in manufacturing, industry, and services. This will provide workers with new opportunities and a strong future in building up Canada's power grids.

Principle 5: Northern, Indigenous, and Remote Communities Must Benefit from a Flexible Approach that Reflects Their Unique Opportunities and Challenges

Northern, Indigenous, and remote communities face unique circumstances that require additional consideration and resources (see Box 1).

- Clean energy options can be limited by geography, technology, and economics since these regions are not connected to the continental electricity grid. The territories, in addition to isolated grids, have small rate/tax bases, debt caps, and limited means for raising revenues to address aging energy systems, expand generation and achieve net-zero emissions. Diesel generation plays a key role in energy security across the North and in remote regions, but it also comes with significant implications for affordability, the environment, and public health. Electricity rates in the North are also the highest in Canada because power generation is expensive to operate, and generation capacity is limited in its ability to respond to growing demand.
- An expanded supply of reliable energy is essential for maintaining public safety and community services and spurring new economic growth and locally-led energy solutions. To do this, the North will need an appropriately scaled and tailored approach to address these challenges and pursue opportunities that support economic reconciliation, localized jobs, energy affordability, responsible resource development, and Arctic sovereignty.

Principle 6: Indigenous Peoples and Communities Must be Recognized as Clean Energy Leaders

Indigenous Peoples are key leaders and partners in helping to transform the electricity sector across Canada.

- This includes the growing number of Indigenous communities and proponents that are building projects to supply clean electricity and reduce reliance on fossil fuels. As the final report of the Wah-ila-toos Indigenous Council makes clear, to realize the full potential of Indigenous-led clean energy projects, Indigenous communities and businesses must have the appropriate tools and capacity. This matters because clean energy projects can provide tangible community benefits such as training, job creation, and skills development, which empower local expertise and enhance energy literacy.

Over the long-term this will foster control over energy systems and advance energy sovereignty, allowing communities to manage resources in alignment with their values and needs.

- The recognition of Indigenous Knowledge systems in the clean energy transition affirms Indigenous leadership in this space. Consideration of Indigenous Knowledge systems ensures projects are developed and implemented more sustainably, with a more complete understanding of environmental and social effects that can help maximize benefits to environmental and human health, society and the economy.
- The Government of Canada is committed to these aspirations and goals as part of the country's clean energy future. Its adoption of UNDRIP reflects the federal government's recognition of the vital importance of free, prior, and informed consent, Indigenous leadership, ownership, and project-management structures to achieve a net-zero future while advancing economic reconciliation, and self-determination.

Box 1. Powering clean growth in Indigenous, rural, and remote communities

Greater access to clean, reliable, and affordable electricity in the North and remote areas can drive economic growth in local communities and create new highly skilled and well-paying jobs for workers. For example, new mines across Canada's North could produce thousands more jobs - mines that will want to ensure that their minerals are produced using clean energy. Such opportunities have spurred almost 30% growth in the number of medium and large-sized Indigenous clean energy projects in the North, and other remote regions since 2017.

Hydroelectricity has been leading the way and accounted for 57% of the new projects, followed by wind (23%), solar (12%), bioenergy (7%), and hybrid sources (2%). Smaller-sized clean energy projects are also proliferating as many Indigenous communities install community-scale or small-generation systems to meet local demand and, in some instances, sell surplus power onto provincial/territorial grids. Indigenous Clean Energy estimates that there are now between 1,700 and 2,100 micro and small renewable energy systems with Indigenous leadership and partnerships.

The Government of Canada has proudly been supporting this clean energy transition. Its Clean Energy for Remote and Rural Communities (CERRC) and Northern Responsible Energy Approach for Community Heat and Electricity (REACHE) Program, for example, have supported over 400 projects since 2016, approximately 80% of them Indigenous-led. Notable examples include (federal contributions noted in brackets):

- ***Fort Chipewyan Solar Project (Alberta)*** ($4.5M) – The largest off-grid solar project in Canada, which is supplying 25% of the community's electricity, which means eliminating the burning of 650,000 litres of diesel fuel annually.

- ***Haeckel Hill Wind Project (Yukon)*** ($9.9M) – The largest Indigenous-owned wind energy project in a remote and Northern community in Canada. It is also the Yukon's first Independent Power Producer wind energy project to enter commercial operation. Its turbines are expected to generate enough electricity to power up to 650 homes over the next 20-plus years, while displacing 1.5 million litres of diesel annually.
- ***Old Crow Solar Project (Yukon***) ($3.1M) –One of the Northern-most solar projects in Canada, which is meeting 24% of the community's electricity needs while reducing its reliance on diesel by 180,000 litres annually and generating revenue for the remote Indigenous community of Vuntut Gwitchin First Nation.
- ***L'Institut de développement durable des Premières Nations du Québec et du Labrador (Québec)*** ($921,353) - This project is providing technical support, training, tools, and awareness to rural and remote Indigenous communities to build capacity and enable community-led projects for renewable energy.
- ***Mary's Harbour Renewables Project (Newfoundland and Labrador)*** ($2.5M) - A successful example of the integration of a solar array and battery storage system through the refurbishment of an existing run-of-river hydro plant. Its addition to the community's diesel-fueled generating system eliminates the burning of 1.2 million litres of diesel annually.
- ***Ahtaapq Creek Hydropower Project (British Columbia)*** ($4.9M) - This 350 kilowatt (kW) run-of-river hydro project in the remote Hesquiaht First Nation community of Hot Springs Cove on Vancouver Island will reduce local diesel consumption by 80%, or 186,000 litres annually over the project's 40-year lifespan.

▸ Section 1 footnotes

2.0 Toward the Grid of the Future

In this section:

2.1 Global Context

2.2 Canadian Context

2.3 Regional Context

2.1 Global Context

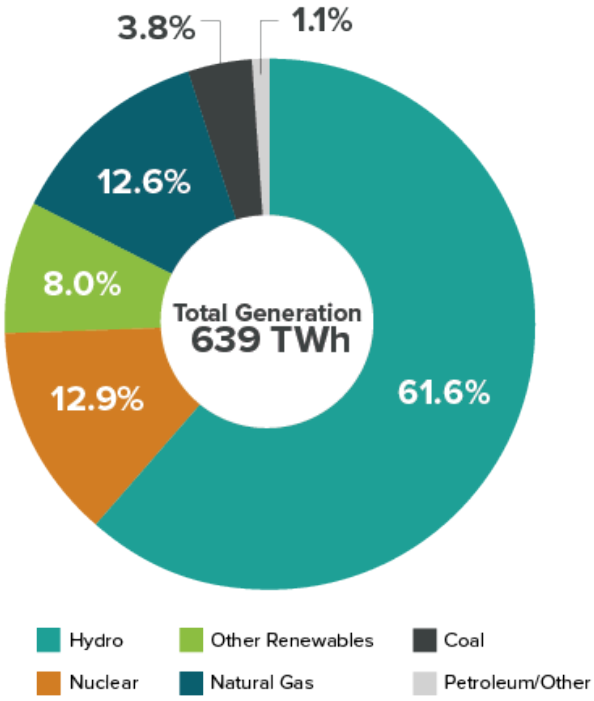
Countries around the world are racing to dramatically expand clean electricity's role in their economies. The International Energy Agency recently declared that the world is "moving at speed into the Age of Electricity, which will define the global energy system going forward and increasingly be based on clean sources of electricity." Every G7 nation has committed to a carbon-free electricity sector and more than 140 countries are working toward net-zero emissions by 2050. In addition, almost 200 countries participating at the COP 28, UN Climate Change Conference, in Dubai last year agreed to triple the world's generating capacity of renewable energy to at least 11,000 gigawatts by 2030. Canada also joined over 20 countries in launching the Declaration to Triple Nuclear Energy globally by 2050. And following COP 29 last month, Canada, alongside 50 other countries, including Germany, Saudi Arabia, the United Kingdom, and the United States, endorsed a voluntary pledge and committed to pursue efforts towards a collective goal to deploy 1,500 gigawatts of energy storage globally by 2030 – more than six times the capacity of 2022. Many countries are rapidly expanding their domestic energy production to insulate themselves from the kind of disruptions to global energy systems and supply chains that were recently caused by geopolitical events like the Russian invasion of Ukraine and the COVID-19 pandemic. This shift has also been accelerated by the increasingly competitive capital costs for renewables and clean technology. For example, the International Energy Agency found that investment returns on clean energy projects have been more consistent when compared to those for oil and gas project returns. [19] Renewable energy accounted for 86% of the world's net new generating capacity in 2023. [20]

2.2 Canadian Context

Canada is a world leader in clean electricity generation, with hydroelectricity making the largest single contribution. In 2022, Canada generated 639 terawatt-hours (TWh) [21] of electricity and more than 80% was non-emitting (Figure 3). [22], [23] This was largely due to vast hydroelectric resources – which provide about 60% of Canada's electricity – and uranium-powered nuclear generation. [24] Electricity generation from coal is being phased out by 2030 across Canada, with Ontario leading the way in 2014, and Alberta being the most recent province to do so in 2024, six years ahead of schedule. Nova Scotia has a plan to phase out coal and achieve 80% renewables by 2030, and New Brunswick is exploring the option of converting its coal-fired facility to sustainably sourced biomass, supported by the Government of Canada. Meanwhile, power generation from renewables increased 14% between 2011 and 2022, driven largely by solar and wind, which are the fastest-growing electricity sources in Canada.

Canada's electricity sector has taken unrivaled action to reduce emissions. Between 2005 and 2022, Canada's yearly emissions from electricity generation fell from 124 megatonnes (MT) of carbon-dioxide equivalent to 56 MT – taking its share of national emissions from 16% down to 8%. This strong action, driven by provincial leadership, has reduced electricity-related carbon emissions by nearly 60% in barely two decades – more than any other economic sector in the country. In parallel, from 2000 to 2020, electricity demand largely stabilized, owing to a deliberate push to improve end-use energy efficiency. Throughout these transformations, Canadian electricity rates remained some of the most affordable among advanced economies.

Figure 3. Canadian electricity generation (2022)



Source: Canadian Centre for Energy Information, Energy Fact Book, 2024-2025 (2024).

▶ Long Description

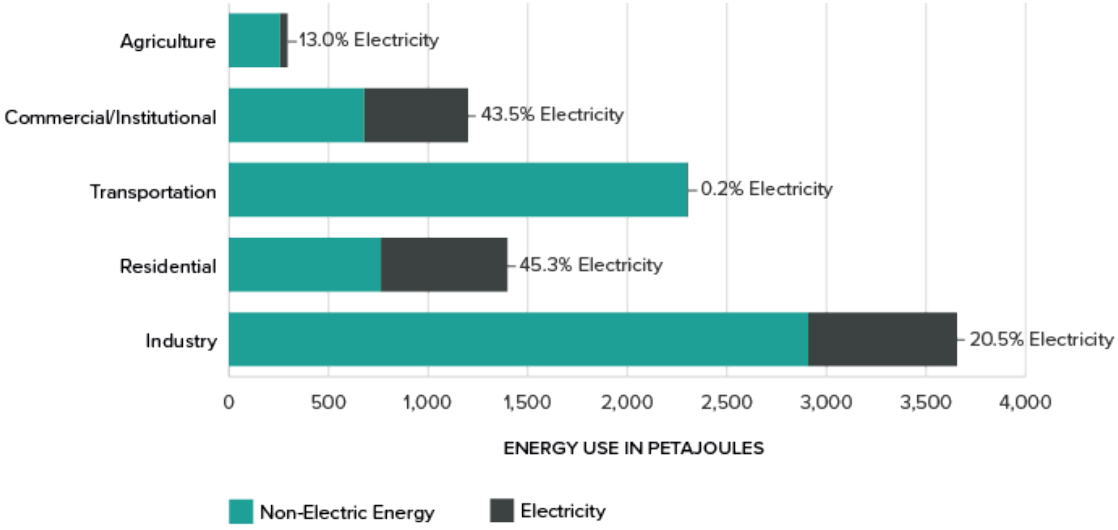
Canada is a leader in nuclear energy, with nearly 70 years' experience. Our nuclear future is equally bright. Canada's 18 operating CANDU reactors, which account for about 13% of Canada's electricity generation, are known for their efficiency and safety. They also boast the unique ability to use natural uranium as fuel, which strengthens energy security and stability. Most of these reactors are now undergoing refurbishment – on budget and on schedule – which ensures that future generations will benefit from this distinctly "made in Canada" technology. In addition, CANDUs can also be found operating in six other countries around the world. Owing to this deep nuclear history, Canada has a robust nuclear energy supply chain, which employs over 76,000 Canadian workers, including thousands in high-quality unionized positions. Canada also contributes significantly to the

global nuclear energy landscape, including approximately 85% of the supply chain for domestic CANDU reactors [25]. From mining and refining uranium ore as the world's second-largest uranium producer, to generating energy and managing radioactive waste, Canada confidently demonstrates expertise across the entire nuclear fuel cycle. Canada's experience advancing a Deep Geologic Repository, including finalizing site selection in November 2024, and its commitment to consent-based siting also positions it a global leader in responsible nuclear waste management.

Canada is at the forefront of nuclear energy research and development, including small modular reactors (SMRs) [26], which are flexible, scalable, and safe energy solutions ideally suited to powering communities and industries. Canada is one of the first countries to include nuclear energy in its *Green Bond Framework* (2023), and this leadership reflects a growing recognition that investments in both SMRs and large scale nuclear are critical to achieving the global energy transition.

Canada's major energy-consuming sectors (i.e., agriculture, commercial and institutional, transportation, residential and heavy industry) vary widely in their current degree of electrification (Figure 4). Their potential for electrification is shaped by technological advancements, grid capacity and economic considerations. For instance, electric arc furnaces used to produce steel require cheap and plentiful electricity, and non-emitting electricity sources can reduce the carbon footprint of any steel produced. [27] Aluminum producers are starting to explore and commercialize ways to produce aluminum without generating direct greenhouse gas emissions, in which the federal government has invested $80 million to date. [28] Steel can also be recycled using electricity and producers increasingly choose this pathway where scrap steel and electricity are available. [29]

Figure 4. Sectoral energy use in Canada (2021)



Source: Natural Resources Canada, *National Energy Use Database* (NEUD): Comprehensive Energy Use Database, (2021)

▶ Long Description

2.3 Regional Context

The work required to build tomorrow's electricity sector varies widely among the provinces, territories, and regions. Canada's electricity systems are supported by long-lived and robust institutions and structures that deliver reliable and affordable electricity. But the ability of any province or territory to expand and decarbonize its grid(s) will be affected by numerous factors, including its natural resource endowment (e.g., water, wind, sunlight, forests, and natural gas), the availability and affordability of new technology, population (growth, density, and distribution), regional economies and market structures, climate and topography, as well as a willingness to work alongside its partners and neighbours.

Canada's provinces and territories understand that access to low-carbon electricity is becoming a decisive factor in investment decisions. This includes everything from green steel production to electric vehicle (EV) manufacturing and associated supply chains in Ontario and Quebec. Between October 2020 and April 2024, investments totalled $46 billion across the EV supply chain in Canada [30]. It also includes such promising opportunities as petrochemicals and hydrogen production in Alberta, liquefied natural gas development in British Columbia and Alberta, potash production in Saskatchewan, and hydrogen development in Atlantic Canada. Quebec recently saw three times more electricity demand from potential industrial projects than it was able to approve due to supply constraints. [31]

Meanwhile, the Government of Alberta, like other jurisdictions, is attracting investment from electricity-intensive data centres that are searching for cool climates and affordable power to support cloud service providers and artificial intelligence companies [32] (see Box 2).

Box 2. Artificial Intelligence – Optimizing grid operations and a growing source of electricity demand

Artificial Intelligence (AI) has incredible potential to transform the economy, improve the way we work, and enhance our way of life. The global race to scale up and adopt AI is on, and Canada is at the forefront. Canada was the first country in the world to introduce a national AI strategy and has invested over $2 billion since 2017 to support AI and digital research and innovation. In Budget 2024, the Government committed to invest in a further $2.4 billion package of measures to secure Canada's AI advantage. Canadian provinces and territories understand the significant economic opportunity that AI presents, and are welcoming data centres, with an estimated 239 data centres operating across the country today. Multiple factors make Canada an attractive destination for data centres, including relatively low electricity prices, significant renewable and clean electricity resources, and a relatively cool climate. [33]

Integration of AI has significant potential to improve the planning and operation of electricity systems, notably by enhanced decision-making, optimized forecasting and modelling, improved efficiency and distribution of energy sources, and accelerated innovation. These benefits could notably contribute to mitigate the need for electricity infrastructure investments in the future. Canada's electricity sector understands the potential benefits of AI and is actively examining how best to leverage it. The critical importance of system reliability, safety, and security, however, will require careful deliberations on AI deployment in electricity system operations.

Concurrently, widespread use of AI across the economy is expected to have a significant impact on electricity demand. Globally, data centres, which provide the enabling infrastructure for the use of AI, consumed 1.4-1.7% of global electricity and this is expected to double by the end of 2026. [34], [35] The rapid growth of AI applications is a significant contributor to this rising electricity demand. It is estimated, for example, that AI queries require ten times the electricity of queries using a typical search engine. [36] This expected increase in electricity demand will require further investments in generation, storage, and delivery infrastructure. Smart grid management tools could help to meet the demands from data centres while also maintaining grid stability. Considering this, utilities and system operators in Canada have begun factoring data centre electricity usage into their outlooks. For example, Hydro-Québec anticipates an increase of 4.1 TWh in data centre demand from 2023 to

2032. The Ontario Independent Electric System Operator (IESO) lists data centre electricity demand growth as a key driver in expected power use in Ontario's commercial sector. The Alberta Electric System Operator's (AESO) latest outlook includes a High Electrification scenario that includes higher electricity demand from data centres. [37]

Most jurisdictions are taking concrete action to move toward net-zero emissions economies by 2050. The majority of provinces have commissioned studies, developed action plans, pledged commitments, and/or enacted legislation to significantly reduce their emissions in the short term or achieve net-zero emissions by 2050. This includes jurisdictions most reliant on fossil fuels. As well, six provinces already draw more than 90% of their electricity from non-emitting sources. The diversity of approaches reflects a combination of both policy choices and regional circumstances, since provinces and territories are endowed with different natural resources. The federal Clean Electricity Regulations provide a technology-neutral national market signal that, starting in 2035, puts Canada as a whole on the path to a net zero grid by 2050.

Partnerships between provinces can advance shared goals related to the electricity sector. As an example, on December 12, 2024, Quebec and Newfoundland and Labrador announced an agreement in principle to work together to bolster existing capacity to the existing Churchill Falls generating station, add a new generation station at that site, as well as to develop a new facility at Gull Island. This will increase generating capacity in Labrador by 3,900 megawatts.

Canada and the U.S. enjoy a strong trading relationship cemented by a joint commitment to electricity reliability and energy security. Electricity exports to the U.S. power the equivalent of nearly six million homes south of the border. In 2023, Canada exported about $4.3 billion worth of electricity (49.3 TWh) to the U.S. and imported about $1.9 billion worth (21.5 TWh). [38] As demand in both countries is expected to rise, provinces and states are building new transmission connections to reap the benefits of electricity system and market integration.

Cross-border collaboration ensures the secure and reliable operation of our electricity systems, and safeguards against cyberattacks. This close partnership is also evident in the recent Agreement in Principle to update the Columbia River Treaty [39], the culmination of six years of precedent-setting negotiations involving national governments, a province, and multiple states alongside extensive Indigenous representation. The Columbia River and its tributaries account for 40% of U.S. hydropower production, and around half of BC Hydro's total generation capacity. [40] [41]

Canada's existing electricity infrastructure was often built on Indigenous treaty or traditional territory without seeking free, prior, and informed consent. Significant infrastructure was also built prior to legal decisions that have formally established the basic consultation and accommodation obligations found in the Constitution Act, 1982. This cannot be repeated, and all levels of government must ensure that the legal duty to consult and accommodate is upheld on all new electricity projects. Today, Indigenous Peoples are increasingly leading and/or participating in the clean energy economy, and many are pursuing self-determination in the energy space. This includes energy project leadership and ownership, as well as stewardship over the impacts of new electricity projects on land, air, and water. Many changes to the electricity sector have and will continue to occur on Indigenous lands, and communities are increasingly identifying ownership or partnerships in these electricity projects as a high priority. This is one of the reasons why the federal government is introducing the Indigenous Loan Guarantee Program (ILGP). When planned with Indigenous Peoples as partners, clean electricity projects can advance economic reconciliation, equity, and community development, and environmental stewardship.

▸ Section 2 footnotes

3.0 Federal Action

In this section:

3.1 Focus Area 1: Growing the Grid and Managing Demand

- 3.1.1 Federal investments will provide support to drive investments
- 3.1.2 Helping to improve energy efficiency and making demand more flexible will support an affordable transition
- 3.1.3 Supporting codes and standards modernization, development and adoption to ensure excellence and consistency across Canada

3.2 Focus Area 2: Providing Policy Certainty and Smoothing the Path

- 3.2.1 Implementing a clear regulatory framework to chart a course to net-zero emissions
- 3.2.2 Bolstering review processes and coordination to improve the permitting of projects
- 3.2.3 Strengthening and modernizing Canada's grid infrastructure to efficiently move power where it's needed
- 3.2.4 Improving data sharing and monitoring to facilitate better decision making

- 3.2.5 Advancing electricity research and development for long-term system transformation
- 3.2.6 Enhancing grid reliability and climate resilience to ensure electricity remains dependable in a changing world

3.3 Focus Area 3: Collaborating on Tailored Approaches for Every Region

- 3.3.1 Federal convening power and supports will improve collaboration, planning, and coordination
- 3.3.2 Advancing economic reconciliation with Indigenous Peoples
- 3.3.3 Adapting approaches to the distinct circumstances of the North and remote areas

A substantial increase in demand for clean electricity is expected as greener options that require less carbon embedded in their products or rely on low-emissions electricity emerge for moving people and products, heating our homes and buildings, manufacturing goods and providing services, and decarbonizing industries – all in support of a growing Canadian economy and population. To meet this demand, the country will need to expand and improve existing electrical grids while attracting significant new investments to enable infrastructure upgrades, increased energy storage and new technologies. This transformation will be aided by reducing the timelines to complete projects and by prioritizing investments in energy efficiency to ensure the fastest and lowest-cost pathways to a clean energy future.

Efforts to expand and decarbonize our grids will require an unprecedented commitment to reducing barriers to the joint planning and/or operation of electricity systems between jurisdictions across the country. Looking ahead, governments, Indigenous peoples, industry, workers, businesses, households, and individuals will need to make a vast array of decisions to position themselves to seize the enormous benefits of a clean electricity future. Successfully navigating the opportunities and challenges will require anticipating growth, aligning resources, engaging in responsible planning, labour force analysis, pathway analysis, development of roadmaps, reducing barriers, and creating the necessary enabling conditions. It will also require significant investments and effective collaboration amongst many decision-making entities.

This section lays out three key areas of focus for effective, achievable, and necessary action in the electricity sector to support a net-zero emissions economy by 2050. Section 4 consolidates all of this Strategy's actions, sub-actions, and timeframes in a table format.

3.1 Focus Area 1: Growing the Grid and Managing Demand

3.1.1 Federal investments will provide support to drive investments

While electricity rates are the responsibility of the provinces and territories, the federal government recognizes the need to work with sub-national governments given that the scale of investment required to expand and decarbonize our grids cannot be borne by ratepayers alone. As a result, the Government of Canada, alongside provinces and territories, have announced unprecedented investments in recent years to help transform the electricity sector, helping to ensure electricity is affordable and reliable. These investments have also been designed to maintain Canada's attractive investment environment at a time when other countries are providing significant support for their electricity sectors.

The Government of Canada will provide support where it is needed, from helping households adopt efficient heat pumps, to enabling businesses and communities to deploy solar energy systems, to catalyzing the largest transmission infrastructure projects in the country. Acting decisively to make sure Canadians have the means to undertake their projects – at every scale, and at the required pace – will allow us to seize the opportunities that can come from the transition and reap the benefits afforded by clean energy and efficient technologies.

Box 3. Collaborating for change in Atlantic Canada

The Government of Canada is committed to working with the provinces and territories to identify the investments necessary to advance their clean electricity priorities. For example, the October 2023 Joint Policy Statement on Developing and Transmitting Clean, Reliable and Affordable Power in Nova Scotia and New Brunswick cemented a strong relationship between the federal and provincial governments to advance the drive to net-zero electricity, while ensuring affordability for Nova Scotians and New Brunswickers. Regular bilateral and multilateral discussions have been taking place with each province to advance identified priorities.

This partnership approach, informed by respect for jurisdiction and focused on outcomes, has led to concrete results, including those announced in the Government of Canada and Nova Scotia's September 2024 statement on Ensuring Access to Affordable, Reliable, Secure and Non-Emitting Electricity in Nova Scotia. Actions have included funding through the Smart Renewables and Electrification Pathways Program (SREPs); agreeing to negotiate a loan guarantee for up to $500 million to reduce the costs of refinancing the Maritime Link; Canada Infrastructure Bank's (CIB)

support for Nova Scotia's Green Choice procurement program; and support for the flexibilities in the Clean Electricity Regulations to enable the province's electricity system to grow and decarbonize in a provincially-specific way.

The Government of Canada will achieve this with three layers of very significant financial support, each building on the other and combining for a total value of $60B through to 2035:

i. **Encouraging capital investments through the Clean Economy Investment Tax Credits (ITCs)**, which provide clear and predictable financial incentives that are broadly accessible to eligible organizations. The Clean Technology ITC and the Clean Electricity ITC will directly support investments in certain clean electricity technologies and represent tens of billions in federal support. Notably, the Clean Electricity ITC also would be available to certain non-taxable entities, such as provincial and territorial Crown corporations (subject to certain conditions), and corporations owned by Indigenous communities. In addition, emissions-abated generation projects may benefit from the Carbon Capture, Utilization and Storage ITC, and makers of zero-emission technology can benefit from the Clean Technology Manufacturing ITC. The ITCs also reinforce the important role of highly-skilled workers in building Canada's future through labour requirements, including prevailing wage.

ii. **Leveraging strategic financing via the** Canada Infrastructure Bank **(CIB) and the** Canada Growth Fund **(CGF)**.

- The Canada Infrastructure Bank will invest at least $10 billion in its priority sector of Clean Power, which includes zero-emitting generation (including nuclear), energy storage, and transmission (including interties), as well as at least another $10 billion in green infrastructure, including energy efficient building retrofits, water, wastewater, carbon capture, utilization and storage, clean fuels, hydrogen, and zero emission vehicle charging and refueling.

  The CIB has also been engaged in strategic discussions with provincial and territorial governments, as well as Indigenous communities, to support their top priorities. As one example, the CIB has committed $970 million in financing for the initial phase of Canada's first grid-scale small modular nuclear reactor (SMR) at Darlington, which is being built by Ontario Power Generation. Another key example includes the CIB's $138 million investment in three grid-scale battery projects in Nova Scotia which includes an equity loan of up to $18 million for Wskijinu'k Mtmo'taqnuow Agency, an economic partnership owned by 13 Mi'kmaw communities.

- The Canada Growth Fund is a $15-billion, arm's-length public investment vehicle that helps catalyze substantial private-sector investments in Canadian businesses and projects to help transform and grow Canada's economy at the pace and scale needed to achieve net-zero emissions by 2050. By accelerating these private-sector investments, the CGF aims to reduce emissions, accelerate technology deployment, scale up companies, encourage intellectual property retention, and capitalize on Canada's abundance of natural resources.

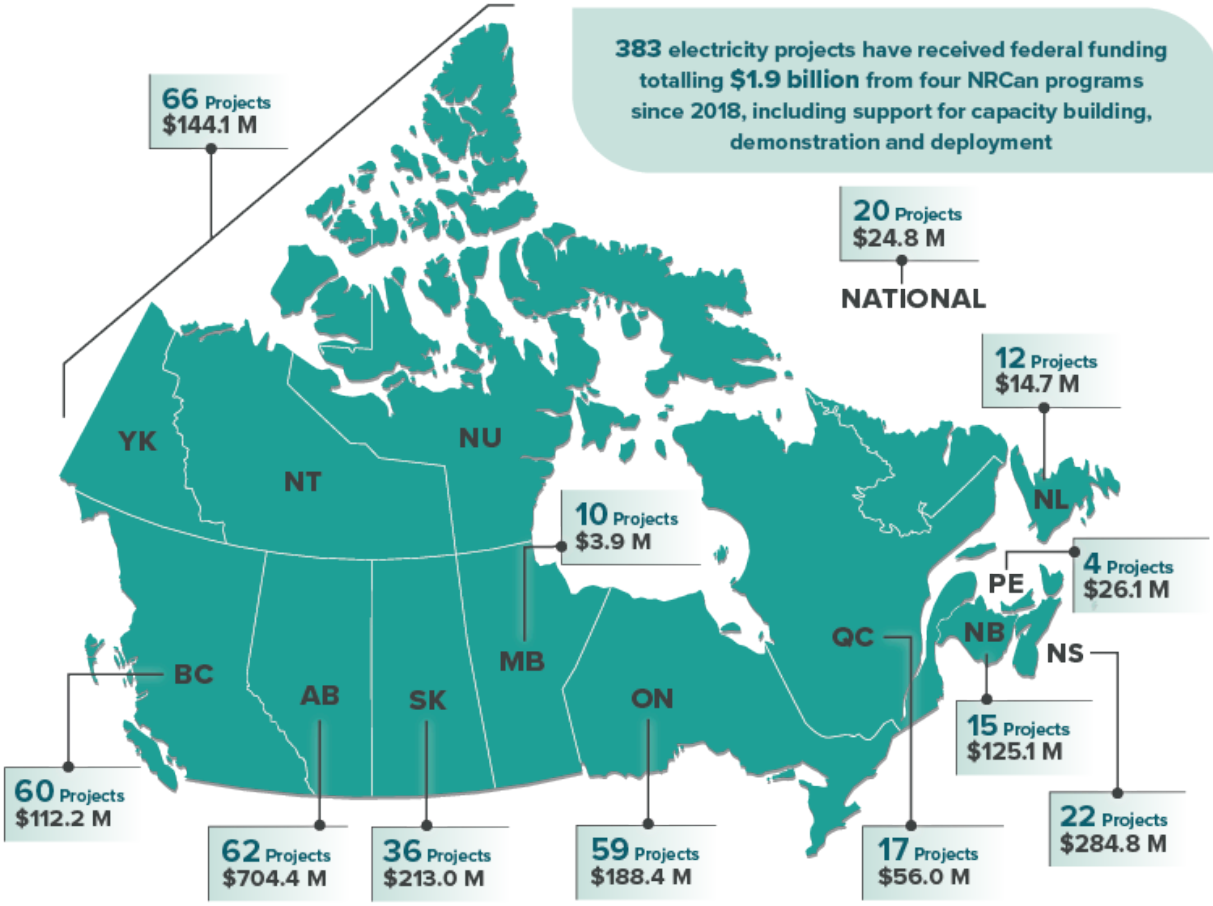
  The CGF's first investment was $90 million to support Calgary-based Eavor Technologies, a geothermal energy company that developed an innovative technology to produce clean, reliable baseload heat and power using a proprietary closed-loop geothermal system. The CGF also announced a carbon contract for difference (CCFD) for Markham District Energy in June 2024, for the Ontario-based operator of district energy networks to support their investment in a new heat pump system, with the potential to reduce almost 180,000 tonnes of CO2 emissions over the 10-year CCFD term.

iii. **Using targeted programming to support the unique needs of sectors or projects of national and strategic significance.** The primary support mechanism is Natural Resources Canada's Smart Renewables and Electrification Pathways (SREPs) program. This program supports deploying clean electricity infrastructure and aims to modernize and strengthen the electricity grid to ensure a reliable, affordable, and clean electricity system for all Canadians. Launched in 2021, SREPs is currently supporting 147 projects, across every province and one territory. Of these, 75 are deployment projects that are building 2,700 megawatts (MW) of renewable energy capacity and 2,100 megawatt-hours (MWh) of energy storage capacity. The other 72 are capacity-building projects that are helping Indigenous and other communities participate in the renewable power sector. Of SREP's 75 deployment projects approved since 2021, 44 feature Indigenous ownership. In late 2024, SREPs began accepting new applications, following an almost $3-billion top-up that brought its total funding envelope to approximately $4.5 billion. The program works through:
   - The Critical Regional Priorities Stream, which is working directly with provinces and territories. This includes via the Regional Energy and Resource Tables, which are joint partnerships – working in collaboration with Indigenous partners and key stakeholders – to identify and accelerate shared economic priorities for an affordable, reliable low-carbon future in the energy and resource sectors.
   - The Utility Support Stream, which will provide funding for utility and system operator-led projects, such as grid modernization, technology upgrades, transmission and distribution system upgrades and expansions, and projects that improve grid reliability, resiliency, and flexibility, including demand response [42/a>].

- The Indigenous-Led Clean Energy Stream, which provides funding to increase meaningful and equitable Indigenous participation in decarbonizing the electricity system. This includes supporting clean energy projects that benefit communities and meet their priorities. This stream seeks to advance projects unable to access other funding sources.

SREPs has been strategically designed to promote investments in jurisdictions with the highest emissions in their electricity sector, but it may also help to advance key clean energy projects in other regions. Long-term funding to 2036 will enable the program to adjust over time to meet evolving priorities. SREPs complements additional NRCan funding programs that support clean electricity projects across the country (Figure 5).

Figure 5. Clean electricity and capacity building projects approved for NRCan funding, by province



Source: Natural Resources Canada (NRCan), Approved funding for clean electricity and capacity building projects, by province, from NRCan programs: Smart Renewables and Electrification Pathways Program, Clean Energy for Rural and Remote Communities Program (includes bioheat projects), Emerging Renewable Power Program, Smart Grid Program (2024).

▶ Long Description

Box 4. Federal investments in action – how the SREPs Program is helping build the grid of the future

One hundred and forty-seven (147) SREP projects have been approved across the country, utilizing market-ready technologies to cut emissions in Canada and adding around 2,700 megawatts of clean electricity capacity – enough power for hundreds of thousands of Canadian homes. [43] SREPs prioritizes Indigenous involvement in clean energy projects, with 44 projects out of 75 infrastructure projects having Indigenous ownership. Examples of projects supported by SREPs:

- **Hilda Wind Power (Alberta):** $17.5 million to support the 104MW Hilda Wind Power project, which will bring significant job creation and capacity building to Cypress County while boosting local supply chains.
- **Salay Prayzaan (Alberta):** This 4.9 MW solar power project is being developed as a key initiative of the Climate Change Action Plan of the Otipemisiwak Métis Government (formerly Métis Nation of Alberta) [44] and is expected to bring resilience to the local grid and contribute to powering businesses and service delivery centres owned by the Otipemisiwak Métis Government. The SREPs program provided $8.9 million to this project. Profits generated will fund social and economic development initiatives and programs benefiting Métis people across Alberta.
- **Awasis Solar (Saskatchewan):** This 10MW solar project is 95% owned by Cowessess First Nation and benefitted from a $18.3 million SREPs contribution. The project has created training and skills opportunities for the Indigenous community and will generate sustainable income.
- **Bekevar Wind Farm (Saskatchewan)**: This 200 MW project, helping to power more than 100,000 homes in Southeastern Saskatchewan, is led by Cowessess First Nation owned-entity Awasis Nehiyawewini Energy Development, who worked with Innagreen and Renewable Energy Systems Canada. This is one of Canada's largest wind farms and is reducing carbon emissions by approximately 130,000 tonnes a year, while creating good jobs and providing revenue to the Cowessess First Nation. The SREPs program provided $50 million to this project, building on a $173-million federal investment from the Canada Infrastructure Bank.
- **Burchill Wind Energy (New Brunswick):** $50 million in federal funding, including to build 10 wind turbine generators, producing up to 42 MW of clean, renewable energy coupled with a ~6MW/12 megawatt-hours utility-scale battery energy storage system. A partnership between Neqotkuk Maliseet Nation and Natural Forces Development, the project creates a new revenue source from renewable energy for Neqotkuk Maliseet Nation and other participating Wolastoqiyik Nations,

while creating jobs during construction and operations and supporting a greener New Brunswick grid.

- **Grid Modernization (Ontario):** The province's power grid operator, Independent Electric Systems Operator, used a $16.7-million investment to modernize its Control Centre, which can now provide real-time data on storage facilities, aggregate resources, and allow for supply as low as 100 kW in Ontario's electricity markets.
- **Energy Storage Deployment (Ontario):** Through an approximately $2-million investment in SWITCH Power, five behind-the-meter energy storage system (totaling 8.5 MWh capacity) will be deployed in Toronto, Mississauga, Belleville, and Mitchell. These Distributed Energy Resources (DERs) are intended to showcase Ontario's capability to deliver grid and market transformation, in partnership with the IESO. This project also supports developing an Energy Market Platform that will enable DERs to play a meaningful role in the province's grid, allowing it to become more resilient and increase delivery avenues.
- **Oneida Energy Storage (Ontario):** Heralded as the largest electricity battery storage project in Canada, the 250-MW project received $50 million in funding and the CIB played a key role supporting project development through an investment agreement, the CIB investment in this project is up to $535 million. The project is developed as a partnership between the Six Nations of the Grand River Development Corporation, Northland Power, NRStor and Aecon Group.

SREPs complements other federal initiatives, including the $1.5 billion Critical Minerals Infrastructure Fund (CMIF), which was launched in November 2023 to support clean energy infrastructure projects to power the production of critical minerals. The CMIF recognizes that many mining operations are remotely located and rely on burning fossil fuels such as diesel to produce their supply of electricity. The CMIF supports a range of renewable energy (e.g., wind, solar, hydro) and grid connection projects by helping to fund everything from predevelopment to construction. The CMIF has announced $200 million in funding toward clean energy projects, including regional projects (e.g., Yukon-British Columbia Grid Connect Project, Taltson Expansion Project) and projects to support specific mines. [45]

3.1.2 Helping to improve energy efficiency and making demand more flexible will support an affordable transition

Enhanced energy efficiency and load flexibility can provide some of the quickest and most cost-effective means for mitigating the expected growth in electricity demand by 2050. Demand Side Management (DSM) -- as well as Distributed Energy Resources (DER), which are small-scale energy resources located near the site of energy use that generate, control and store energy, such as residential solar panels and electric vehicles – can provide

significant energy savings and reduce strain on the grid by facilitating peak-demand management, in addition to stabilizing the grid and improving its reliability and resilience. [46] Other technologies, such as district energy systems, can also support electrification by providing alternative forms of heating and cooling during peak demand, which helps to reduce the need to expand electricity infrastructure and supports cost-effective grid modernization. More can be done to support utilities, grid operators, and customers in deploying these solutions that have the potential to drive cost-savings, affordable transition pathways, and economic competitiveness.

Prioritizing energy efficiency can help to mitigate costs. By minimizing the need for new investments in major generation, transmission and distribution projects, the financial impact on customers and ratepayers is also reduced, which helps to keep electricity bills affordable. For example, from 1995 to 2021, federal energy efficiency regulations have saved an estimated 4,435 petajoules (PJ) of energy valued at over $100 billion. That is money kept in the pockets of households, businesses, institutions, and industries.

Box 5. Supporting Net-Zero Homes and Communities

The **Towards Net-Zero Homes and Communities Program** provides funding to support the implementation of original and creative tools and methods to pursue net-zero residential building emissions by 2050 and initiatives that empower all residents to contribute to Canada's transition to this goal of net-zero residential building emissions. Toward Net-Zero supports Indigenous, rural, and remote, and under-resourced communities in their efforts to reduce residential greenhouse gas (GHG) emissions. Federally funded initiatives include:

- $586,040 in funding for the First Nations Energy & Mining Society to train "Energy Champions" to support First Nations communities as they establish community energy plans.
- $300,000 in funding for the Lac Ste. Anne Métis Community Association to install highly energy-efficient heating, ventilation, and HVAC mechanical systems in 12 elder residential buildings for the Métis of Lac Ste Anne.
- $291,201 in funding for ÉcoHabitation in Iles de la Madeleine, Quebec, to demonstrate affordable ways to decarbonize existing buildings while focusing on promoting energy efficiency in regional residential buildings.
- $93,500 in funding for the City of Edmonton to help decrease permit review time for energy efficient buildings, increase review consistency and to understand energy industry performance, including through the design of new software to prioritize energy efficient buildings in the building permit review process.

Canada has committed to joining the global effort to double annual improvements to energy efficiency from two to four percent every year until 2030. Continued investments to meet this commitment will be essential to decarbonizing the grid while simultaneously lowering energy bills, strengthening energy security, and enhancing industry competitiveness.

The Government of Canada will achieve this by:

i. **Delivering the next phase of the Canada Greener Homes Initiative**, including the upcoming Canada Greener Homes Affordability Program (for low- to median-income households), the Canada Greener Affordable Housing Program (for providers of affordable housing), and the Oil to Heat Pump Affordability Program (to help low-to-median-income households across Canada convert from heating oil) (Figure 6). Program co-delivery with provincial and territorial partners will increase delivery speed, and Canada Mortgage and Housing Corporation's (CMHC) Greener Homes Loan program (interest-free loans of up to $40,000 for home energy retrofits) will help broaden the reach. These initiatives are consistent with the Government of Canada's commitment to introduce a regulatory framework for phasing out oil heating systems in all new construction by as early as 2028. [47]

ii. **Prioritizing Demand Side Management and energy efficiency in federal supports**, including in the SREPs Utility Support Stream, the Green Industrial Facilities and Manufacturing Program (GIFMP), and other existing and planned programs. (This aligns with a recommendation by the Canada Electricity Advisory Council). For example, a $40-million contribution to Emissions Reduction Alberta, under the GIFMP, will help establish a program for Alberta industry to become more cost- and energy-efficient.

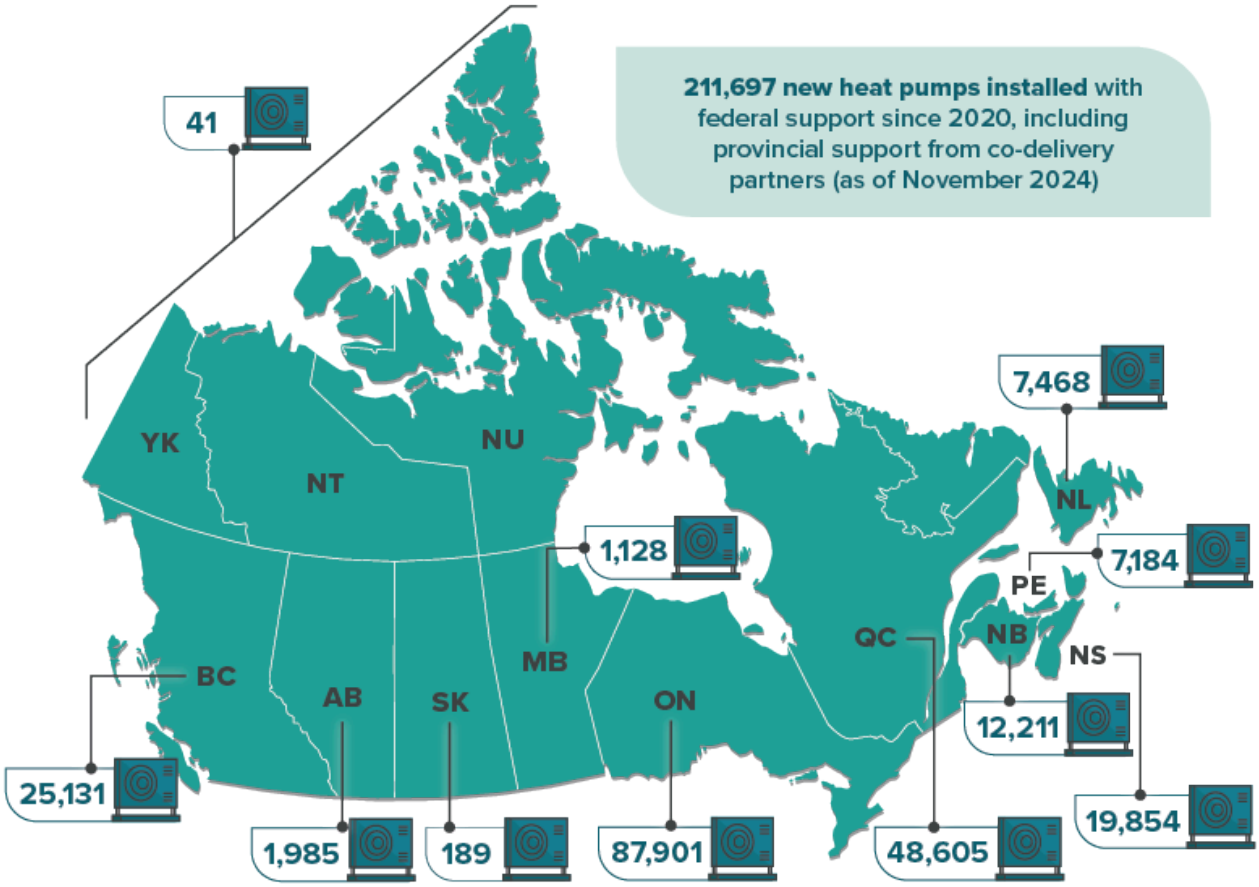
iii. **Modernizing the *Energy Efficiency Act* (EE Act)** to update the suite of legislative tools available to align with today's complex markets for energy-using products and equipment. Adopted in 1992, the *EE Act* allows for establishing minimum energy efficiency standards for a broad range of products and equipment to decrease Canada's overall energy consumption. Modernizing the *EE Act* will ensure it continues to play a pivotal role in driving energy efficiency improvements in complex, virtual marketplaces, for example by broadening reach to cover online retailers and by enabling powers to ensure energy efficiency claims on both paper and digital labels will give consumers accurate information on potential savings.

Box 6. Advancing Energy Efficiency in Ontario Homes

EnviroCentre is one of six market development teams across Canada that received federal funding under the Greener Neighbourhood Pilot Program for its Retrofit Accelerator project that is now developing the local building sector's capacity to perform deep retrofits faster, enabling electrification and more energy efficient

homes, and saving time and money for retrofits in social housing across eastern Ontario. Their work supported Gloucester's Carver Place neighbourhood retrofit project for 80 townhomes, an example that showcases how deep energy retrofits can deliver economic and environmental benefits for affordable housing, leading the way for future work that will create better and more affordable homes. Results from Carver Place neighbourhood test cases are promising, demonstrating an average annual energy reduction of 42% — approximately 35.5 gigajoules — and 2.4 tonnes of greenhouse gas (GHG) emissions, an 82% improvement.

Figure 6. Heat Pumps-Uptake at a Glance



Source: Natural Resources Canada, Grants allocated, by province and territory, as of November 2024 data received from: *Canada Greener Homes Grant (CGHG)*, *Oil to Heat Pump Affordability program (OHPA)*, *Canada Greener Homes Loan (CGHL)*, *Recapitalized Low Carbon Economy Leadership Fund (LCELF)* (2024).

▶ Long Description

3.1.3 Supporting codes and standards modernization, development, and adoption to ensure excellence and consistency across Canada

Advancing the development of codes and standards in Canada and harmonizing their adoption for buildings, appliances, and electrical systems, will help establish clear, consistent, and enforceable guidelines for efficiency, safety, innovation, and reliability. This also serves to advance the national economy and lower costs on the road to net-zero emissions.

In Canada, there are multiple bodies setting codes and standards. Codes and standards are developed nationally through consultative processes, with the Canadian Board for Harmonized Construction Codes (CBHCC) responsible for developing Canada's National Model Codes while the Canadian Standards Association (CSA) is responsible for the Canadian Electrical Code. Federally, the Standards Council of Canada (SCC) has a mandate to promote efficient and effective voluntary standardization in Canada. The SCC's work includes facilitating cooperation in standards development, the accreditation of standards-setting bodies, and engaging with regional and international standard-setting bodies (e.g., International Organization for Standardization (ISO)).

Codes are adopted in provinces and territories by their respective authorities with jurisdiction over codes enforcement. These authorities convene stakeholders to adopt these codes, often with modifications to address regionally specific requirements. Standards have more varied levels of enforcement than codes and are sometimes only adopted voluntarily by utilities or companies that design or operate particular systems and technologies. This can result in different requirements for companies looking to introduce and provide new technologies that can modernize electricity systems and enable lower cost pathways to net-zero. The harmonization of codes and standards must continue to respect regional differences, particularly with respect to safety, by facilitating a consistent experience for the workforce installing these systems and customers who interact daily with their homes, buildings, and the electricity grid.

The Government of Canada will achieve this by:

i. **Continuing to support ambitious building code adoption by jurisdictions**, including through the Codes Acceleration Fund (CAF). The CAF provides funding and capacity-building support to provinces, territories, municipalities, Indigenous governments, and other stakeholders to help accelerate the adoption and implementation of the highest feasible energy performance tiers of the national model energy codes or other high-performance or net-zero emissions building codes. The CAF builds on the efforts of the CBHCC, whose code development priorities for the 2025 model codes include: advancing code harmonization; further supporting energy efficiency tiers from the 2020 codes; specifically minimizing operational GHG emissions with new provisions; and expanding on energy efficiency requirements for alterations to existing buildings. The

Government of Canada will continue to support the development of these ambitious building codes and conduct related research and development.

ii. **Supporting the development and harmonized adoption of electrical codes and standards**, which mirrors a recommendation by the Canada Electricity Advisory Council. This will involve leveraging initiatives such as standards roadmap exercises with CanmetENERGY, as well as ongoing collaboration with standards-setting bodies and committees.

Box 7. The Codes Acceleration Fund

The Codes Acceleration Fund is supporting multiple provinces and other organizations to expedite their adoption of higher tiers of building codes, paving the way for reduced energy usage and a suite of other benefits to building occupants and owners, examples include:

1. $1,462,517 to the Environmental Careers Organization of Canada to provide support to Indigenous communities to help accelerate the adoption and implementation of the highest feasible energy performance building codes.
2. $6,915,025 to the Government of New Brunswick to accelerate code adoption by removing barriers that exist for New Brunswick's building officials, builders, designers, homeowners, and energy efficiency professionals.
3. $2,513,010 to the Canadian Home Builders Association to support market preparedness for the implementation of and compliance with the highest feasible tiers of the National Building Code.

iii. **Seeking to leverage investments announced in Canada's Housing Plan to advance more ambitious buildings codes and broader energy efficiency design options**, such as through the Housing Design Catalogue and Canada Housing Infrastructure Fund, to provide healthier living conditions and lower energy bills for renters and homeowners.

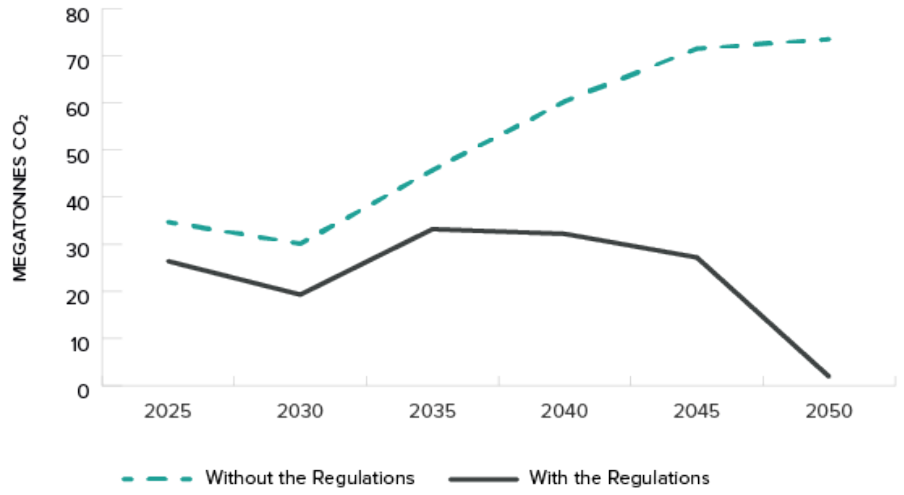
3.2 Focus Area 2: Providing Policy Certainty and Smoothing the Path

3.2.1 Implementing a clear regulatory framework to chart a course to net-zero emissions

The Government of Canada has taken important steps to lay the groundwork for net-zero emissions by 2050, but achieving this hinges on establishing a clean electricity foundation. Regulations set important guardrails for further action, without which greenhouse gas emissions from the electricity sector would begin to rise again after phasing out coal-fired generation in 2030 and with the anticipated growth in demand (Figure 7). Clear regulatory frameworks, such as the Clean Electricity Regulations, and durable policy decisions can

ensure that the ever-expanding electricity system remains clean after 2030, while at the same time providing sufficient flexibility to maintain reliability and affordability plus providing greater certainty to investors and the workforce.

Figure 7. Projection of annual electricity sector emissions to 2050



Source: Projection of annual electricity sector emissions, under a high electrification (1.8x) scenario comparing a "Business as Usual" case without the regulations (green dashed line) vs. with the Clean Electricity Regulations in force (black solid line). ECCC: Next Grid (version 240919), 2024.

▶ Long Description

The Government of Canada will achieve this by:

i. **Maintaining existing regulations to phase out coal by 2030** via the *Reduction of Carbon Dioxide Emissions from Coal-fired Generation of Electricity Regulations*. With New Brunswick, Nova Scotia, and Saskatchewan working to phase out coal by 2030 – and Alberta achieving a total coal phase-out years ahead of schedule – this will enable further reductions of GHG emissions from the electricity sector within this decade.
ii. **Driving decisions that reduce GHG pollution under the Clean Electricity Regulations,** which is in keeping with the Canada Electricity Advisory Council's recommendation that the federal government expedite policy and regulatory frameworks. The Clean Electricity Regulations (CER) which were finalized in 2024, will enable significant GHG reductions to help achieve a net-zero electricity grid by 2050, while ensuring grid reliability and affordability for rate payers. The CER's Regulatory Impact Analysis Statement found it will not result in significant impacts on affordability

for Canadians. Federal analysis and third-party modelling found that the impact of the CER on electricity rates will be minor or even neutral, with other benefits including the value of emission reductions and associated improved outcomes on human health, air quality and the environment. Net benefits of the CER significantly outweigh costs. For Canadian families, electrification is already driving cost-savings on overall energy bills. In addition to this, the multi-billion dollar suite of federal investments helping to build more clean power production and transmission will significantly offset costs of building out clean electricity grids. ECCC modelling also indicates that electricity sector emissions could increase more than twofold without the CER (see Figure 7), in a high electrification scenario, where electricity demand would double from current levels.

The CER also provide a strong market signal and incentive for new investments in renewable energy, nuclear, smart grids, distributed energy systems, energy efficiency, battery storage and emerging technology development and deployment, in addition to workforce training and skills development for Canadian workers.

The federal government maintains its openness to consider negotiations on bilateral equivalency agreements with interested provinces, under the *Canadian Environmental Protection Act* (1999). Such agreements would mean that the federal CER would be substituted in provinces where provincial rules are in place to achieve equivalent emissions outcomes. Recognizing the particular challenges faced in the North, the CER largely does not apply in Northern and remote communities that are not connected to the continental grid [48].

Box 8. The Clean Electricity Regulations in Focus: Built on Engagement

The development of the CER was based on extensive engagement including several consultation rounds: a March 2022 Discussion paper, a July 2022 draft regulatory framework, August 2023: Draft Regulations in Canada Gazette, Part I, followed by a 75-day consultation period, February 2024: Public Update, outlining feedback received and changes under consideration for the final regulations. Since the publication of the draft CER in August 2023, the Department has held over 300 meetings and organized 7 webinars and considered over 850 unique comments and 18,000 submissions from multiple letter writing campaigns. In response to feedback and supported by evidence, the CER include significant compliance flexibility for electricity providers in provinces and territories to continue to provide a reliable supply of power at an affordable price, while still significantly reducing emissions.

iii. **Continuing to ensure that industrial carbon pricing systems in Canada are stringent, effective, and fair.** The Government of Canada sets national standards,

known as the "benchmark criteria," for provincial and territorial carbon pricing systems. If a province or territory does not meet these standards, the federal government may implement a "backstop" system. Fossil fuel electricity generation is covered by industrial carbon pricing across the country, largely via provincial and territorial carbon markets (output-based pricing systems for industry in most jurisdictions, with Québec having a cap-and-trade system in place). These systems aim to reduce carbon emissions while minimizing costs for consumers and industries. The focus of the benchmark criteria is on driving innovation and emissions reductions by keeping the price of carbon credits high, but does not have specific rules for electricity beyond requiring it to be priced. The government will review these criteria by 2026 to ensure they remain effective for 2027-2030 and will reassess provincial and territorial systems in 2026 for the same period. Industrial carbon pricing is critical to unlocking investments in clean energy projects. Therefore, the government is working with provinces and territories to improve carbon markets and support decarbonization projects. Where the federal industrial carbon pricing system applies, it has introduced programs like the Decarbonization Incentive Program and the Future Electricity Fund to return funds collected from carbon pricing to industry while supporting historic investments in clean electricity production, transmission, and related demand-side measures.

3.2.2 Bolstering review processes and coordination to improve the permitting of projects

Federal and provincial regulatory processes need to be more efficient to de-risk major projects and get them built quicker. Major electricity infrastructure projects (e.g., generation, transmission, distribution) can have long lead times. Meeting growing demand for clean electricity will require coordinated and systemic reforms to reduce duplication between federal and provincial regulators and to speed up the approval process. The Government of Canada has instituted a suite of supports to improve project economics and reduce financial risk for major projects. It will also continue to improve impact assessment and permitting process efficiency, including by clarifying timelines, improving engagement and partnerships, and focussing the scope of impact assessments of provincially regulated projects exclusively on effects in federal areas of jurisdiction. The Ministerial Working Group on Regulatory Efficiency for Clean Growth Projects' Action Plan, *Building Canada's Clean Future*, and the associated *Cabinet Directive on Regulatory and Permitting Efficiency for Clean Growth Projects*, both released in 2024, provide a roadmap on the Government of Canada's continued efforts to improve the efficiency of Canada's regulatory system. They are being leveraged to drive greater efficiency and interjurisdictional collaboration in permitting and regulatory processes for clean growth projects, with many new actions in the first phases of implementation. Recent amendments to the Impact Assessment Act enhance flexibility to cooperate with other jurisdictions on project assessments.

Box 9. Learning from co-managed regulatory regimes in Canada's North

In much of the North, the *Impact Assessment Act* does not apply, and Northern regulatory regimes are different by design; they implement commitments from modern treaties and involve co-management boards with members nominated or appointed by Indigenous, territorial, and federal governments. These boards lead inclusive and participatory impact assessment and permitting processes, and in some instances, have final decision-making authority. The legislation incorporates Indigenous knowledge and culture in decision-making and provides for holistic approaches to resource management. Actions to collaboratively advance regulatory efficiencies in unique Northern contexts are already underway as a part of the Canadian Critical Minerals Strategy's Northern Regulatory Initiative (led by Crown-Indigenous Relations and Northern Affairs Canada [CIRNAC] and Canadian Northern Economic Development Agency [CanNor]), including actions on Crown consultation and regulatory coordination.

The Government of Canada will achieve this by:

i. **Better coordinating and monitoring federal project reviews to achieve target timelines through the new Federal Permitting Coordinator**, who is responsible for coordinating federal permitting and regulatory processes for select clean growth projects. Their role will contribute towards meeting the recently established target of five years or less, which will apply to federally designated projects under the *Impact Assessment Act*, and the target of two years that will apply to non-designated project permitting. A target of three years has been established for nuclear energy project reviews. The Ministerial Working Group (MWG) Action Plan also calls on the Government of Canada to review existing laws and regulations that apply to federal decision-making on projects. Following through on the Action Plan, the Impact Assessment Agency of Canada has also launched a new public-facing Dashboard that will increase transparency and predictability on federal timelines for permitting decisions. In addition to these measures, the Cabinet Directive outlines the need for certainty and predictability where federal requirements, processes, timelines, and decisions should be clearly communicated for proponents and investors in consideration of commercial and construction implications and with a service-oriented lens. It also outlines expectations for a culture of urgency in entities issuing federal assessment and regulatory decisions for clean growth projects.
ii. **Working with provinces and territories to advance regulatory efficiency**. The MWG Action Plan makes a commitment to leverage the Regional Energy and Resource Tables as the key forum to support clean growth projects. Through these regional dialogues,

the federal government is testing innovative approaches to regulatory and permitting efficiency outlined in the MWG Action Plan. This includes a regulatory efficiency pilot project with British Columbia as outlined in the *British Columbia Regional Energy and Resource Table's Framework for Collaboration on the Path to Net-Zero*, which aims to improve alignment, integration, and coordination between federal and provincial regulatory and permitting processes for non-designated projects. Canada and British Columbia have a 2019 impact assessment cooperation agreement, which facilitates the substitution of the provincial environmental assessment process for a federal impact assessment, avoiding duplication and fulfilling the goal of "one project, one assessment." Recent amendments to the *Impact Assessment Act* improve the Impact Assessment Agency of Canada's flexibility to cooperate with provinces on assessments. To address the North's unique needs in building clean growth projects, CanNor's Northern Projects Management Office and Crown-Indigenous Relations and Northern Affairs Canada will collaborate closely with the new Federal Permitting Coordinator.

iii. **Advancing "one project, one assessment" for major projects, including nuclear projects, where appropriate.** We will continue to improve efficiency, predictability and timeliness and reduce duplication in a way that does not compromise the integrity of our environmental protections or our duty to protect Indigenous Peoples' rights. This goal includes relying to a greater degree on federal lifecycle regulators, such as having the Canadian Nuclear Safety Commission's process solely apply to certain projects on brownfield sites that support nuclear projects, while ensuring robust assessment of project impacts and engagement with Indigenous peoples that upholds the UN Declaration Act.

iv. **Continuing to support electricity sector projects through the work of the Clean Growth Office and the Clean Growth Hub**. The Clean Growth Office was created in 2023, and now includes the recently established Federal Permitting Coordinator. They play a significant role in accelerating clean growth projects, being responsible for coordinating and advancing federal efforts to improve regulatory efficiency, in addition to supporting project proponents and reporting on regulatory process trends to identify opportunities for continued improvement. The Clean Growth Hub, which is a federal focal point for clean technology, is made up of 18 departments and agencies, and serves as a one-stop shop to help cleantech innovators and adopters navigate federal programs and supports.

v. **Clarifying Indigenous engagement and consultation requirements for industry and developers**, including developing tailored guidance for the electricity sector. The MWG Action Plan aims to advance reconciliation with Indigenous peoples, ensuring Indigenous groups are fully involved from the start of clean growth project development. It also aims to renew the government's Consultation and Accommodation guidelines, co-develop and implement consultation protocol agreements and resource

centres, work with First Nations, Inuit, Métis, and Modern Treaty and Self-Governing Indigenous governments to develop culturally based planning tools, and provide funding support to ensure that Indigenous Peoples can develop their own planning tools.

vi. **Rationalizing, decarbonizing, and electrifying federal government operations** (departments, agencies, and crown corporations) through portfolio planning, capacity building, improving energy efficiency, and clean electricity purchases, under the recently expanded *Greening Government Strategy* [49].

vii. **Exploring novel approaches to reviews – while ensuring safety –** notably, a compliance-based approvals framework for low-risk electricity projects and learning from the "Public Lands for Homes" initiative to site clean electricity projects on federal Crown land.

Box 10. The Greening Government Strategy

The federal ***Greening Government Strategy*** specifies how the Government of Canada will green its internal operations. To minimize real property GHG emissions, departments will use 100% clean electricity in their buildings by 2025 by producing or purchasing renewable electricity. In Nova Scotia, federal work with the provincial government helped lead to the development of the Green Choice Program, which allows large-volume customers, such as the federal government, to purchase clean electricity and/or renewable energy certificates from new projects. In Saskatchewan and Alberta, the Government of Canada partnered with utilities to bring new wind and solar generation online. In New Brunswick it is working with partners to supply clean electricity to federal facilities [50]. In all cases, procurements will include participation of Indigenous communities. In the fiscal year 2023-24, on average 87% of federal electricity consumption was generated from clean, non-emitting sources. On the demand side, the federal government is electrifying heating and cooling in its buildings, using air and ground source heat pumps where feasible. For example, as a part of the rehabilitation of the federal building at 25 St. Clair Avenue East in Toronto, a ground source heat pump system was installed, in addition to rooftop solar PV panels, which along with other measures will reduce the building's GHG emissions by over 80%. [51] The Government of Canada is also greening its conventional light-duty fleet so that by 2030 it consists of 100% zero-emission vehicles, where suitable options are available. As of FY2023-24, 19% of fleet vehicles were battery-electric or plug-in hybrid.

3.2.3 Strengthening and modernizing Canada's grid infrastructure to efficiently move power where it's needed

Much of Canada's existing transmission and distribution infrastructure is aging and needs renewal. [52] Distribution infrastructure needs upgrading not only to replace aging equipment, but also to accommodate increasing loads and to better integrate Distributed Energy Resources and advanced solutions like smart grids. Refurbishing and expanding transmission and modernizing distribution networks will enhance reliability and resilience, allow grids to better respond to peak demand, and reduce delays in connecting new generation and more communities to the grid. Modernizing electricity delivery infrastructure and integrating 'smart' technology can also enable more renewable integration and accommodate new technologies and business models, thereby reducing the need for large infrastructure investments and the passing of those costs to consumers. Updating transmission and distribution infrastructure may help address issues related to energy poverty and give more Canadians access to affordable, reliable electricity. This includes working to ensure that efforts do not exacerbate existing disparities across communities.

While electricity transmission and distribution are areas of provincial and territorial jurisdiction, the scale of investment required presents an opportunity for multi-government collaboration. Canada's electricity regulatory landscape is complex and shaped by a diverse array of provincial and territorial legislation, regulations, and regulatory bodies that are not always designed to support inter-jurisdictional collaboration or net-zero-aligned decision-making. The Government of Canada recognizes that growing and modernizing electricity delivery infrastructure across the country requires an intentional and coordinated inter-governmental approach.

The Government of Canada will help modernize the electricity system by:

i. **Supporting strategic electricity transmission and major clean electricity projects**. This includes encouraging transmission projects to improve grid connectivity and resilience, such as the Salisbury-Onslow Reliability Tie between Nova Scotia and New Brunswick. It also involves exploring tailored approaches to connect major provincial or territorial electricity project proponents with federal funding or other enabling supports (e.g., the Clean Growth Office). Jurisdictions were invited at the 2024 Energy and Mines Ministers' Conference to share their ideas on co-developing a framework for federal support for interprovincial transmission. Separately, some provinces have initiated discussions on their transmission priorities and key challenges. Those conversations are progressing, and the federal government will continue to work with interested provinces and territories to advance joint-electricity system planning and operations, including inter-provincial/territorial transmission projects.
ii. **Aligning the actions of Federal Crown Corporations with federal climate objectives**. The updated *Greening Government Strategy* expects federal Crown

Corporations to align their actions with federal climate objectives, including net-zero by 2050, or adopting equivalent commitments.

iii. **Aligning federal mandates and authorities with net-zero goals and federal climate objectives**, which is in line with one of the Canada Electricity Advisory Council's 28 recommendations. The federal government will revisit existing laws and regulations that may need changes to align project review timelines outlined in the MWG Action Plan and the associated *Cabinet Directive on Regulatory and Permitting Efficiency for Clean Growth Projects*. Furthermore, the MWG Action Plan's Cabinet Directive requires federal entities with a role in clean growth project assessments and permitting to consider project risks relative to Canada's climate action objectives.

iv. **Taking into consideration net-zero goals and priorities in the context of financial, labour, and trade policies.** This includes working with all levels of government to consider actions such as skills building and re-training programs to address shortfalls in skilled labour in Canada's electricity sector, and to ensure the creation of well-paying careers for Canadian workers. The *Canadian Sustainable Jobs Act* (2024) advances measures to support jobs in the low-carbon economy, including in clean electricity, through the creation of the Sustainable Jobs Partnership Council, investments under the Sustainable Jobs Training Fund and the Sustainable Jobs Stream of the Union Training and Innovation Program, alongside other measures.

v. **Targeting programming to enable electricity sector innovation and establishing fora for convening and knowledge-sharing** regarding innovation in the sector (e.g., Innovation and Electricity Regulation Initiative) - for example, funding innovative projects testing new technologies, services and business models. This can enable cost savings for customers as well as risk reduction, data collection, and informed policy and development.

vi. **Exploring long-term sustainable funding sources and mechanisms to support a tailored approach to energy in the North** and major investments in critical energy infrastructure and major energy projects. See section 3.3.3. for a more detailed discussion on the unique needs of the North.

vii. **Addressing data and regulatory barriers to enable greater uptake of Distributed Energy Resources by users that both produce and consume energy**. These consumers can be an important part of an efficient, resilient, and clean electricity system. Unleashing their potential requires working with provinces, territories, regulators, industry, and academic and civil-society partners to – amongst other things – explore and implement secure data sharing and utilization frameworks (e.g., data trusts). It is also important to support codes and standards development and adoption, alongside other activities, that can enable a freer flow of energy information and positioning of energy consumers as more active market participants (e.g., rooftop solar).

3.2.4 Improving data sharing and monitoring to facilitate better decision making

Trust in the models, input data, and assumptions used to inform public policy and investment in the electricity sector is vital to public confidence in Canadian electricity policy. It enables more informed and transparent discussions among electricity industry stakeholders. Utilities and system operators already employ detailed technical models to inform their daily operations, system planning, and investment decisions. Improving the accessibility of this information is also critical to reducing barriers among jurisdictions and improving the prospects for interprovincial cooperation. In addition, it can enable broader stakeholder participation and investment in distributed energy and other cost-saving, net-zero-aligned electricity technologies. Open and transparent data and modelling provide both the information and transparency that decision makers need to inform policy and investment decisions.

The Government of Canada will achieve this by:

i. **Supporting a more cohesive approach across the federal government to develop and implement initiatives to achieve greater data/modelling transparency for all jurisdictions in Canada**, as proposed by the Canada Electricity Advisory Council, as well as convening interested provinces and territories and non-federal bodies (e.g., utilities, regulators) to support more open data and modelling practices, build trust, and better inform decision-making and investments.
ii. **Establishing, tracking, aggregating, and communicating progress indicators on electricity system decarbonization** as a stepping stone toward a net-zero emissions economy by 2050, with regular reporting starting in 2025. Influenced, in part, by a recommendation from the Canada Electricity Advisory Council, this will include exploring existing guidelines and tools (e.g., Statistics Canada surveys) to support key social indicators, such as energy poverty.
iii. **Improving labour market data collection, tracking, and analysis in the electricity and energy sectors**, in line with the interim Sustainable Jobs Plan. Efforts will be made to share this data in a useful way to ensure it can be used by those making decisions related to sustainable jobs, including workers, employers, and skills training organizations.
iv. **Continuing to support data collection to assess regional climate hazards and physical climate risks to electricity infrastructure and operations** through initiatives such as the future *Climate Risk Data Strategy* and the forthcoming *National Strategy for Critical Infrastructure*, as well as exploring adapted approaches in the North.
v. **Leveraging existing actions to ensure robust accountability on energy efficiency measures**, including via the existing annual federal Report to Parliament on reaching efficiency targets, as well as continued progress toward achieving Canada's commitment to doubling annual global energy efficiency improvements every year

through to 2030. The Government of Canada will also advance federal, provincial, and territorial conversations on pathways to enhance energy efficiency across Canada, including through discussions at the 2025 Energy and Mines Ministers Conference and via subject-focused working groups under the federal/ provincial/ territorial Steering Committee on Energy Efficiency.

3.2.5 Advancing electricity research and development for long-term system transformation

Developing and improving commercially available, emerging, enabling, and complementary technologies will increase options for affordably expanding and decarbonizing the electricity sector, particularly in jurisdictions with limited access to non-emitting energy resources. Several emerging smart-grid technologies – including artificial intelligence – show significant potential in enabling and complementing the building out of the clean electricity system in the short and medium terms. The federal government has a role in supporting the scaling up of innovative pilot projects to be adopted and deployed in more communities.

The Government of Canada will achieve this by:

i. **Continuing to support electricity-related research, development and demonstration projects** through existing programs, such as the Energy Innovation Program (EIP) and the Clean Energy for Rural & Remote Communities (CERRC) demonstration program. The EIP targets building and community energy efficiency, renewable energy, batteries, and smart grids. The CERRC program focuses on adapting technologies and systems to meet Northern and Indigenous communities' needs. A recent EIP project provided $5.95 million to the Hydro-Québec Research Institute to develop a transmission and distribution network facility that tests future grid technologies safely without affecting real-world customers. Another EIP investment provided $1 million to Zibi Community Utility LP, a development straddling the border between Ottawa and Gatineau, to develop a fourth-generation, zero-carbon district thermal system, which recovers waste heat from an industrial tissue mill and uses it for space-heating in an adjacent residential and commercial development.
ii. **Supporting electricity-related research and development at federal laboratories**. These federal labs include: CanmetENERGY laboratories in Ottawa and Varennes, Quebec, which conduct research and modelling of clean energy and related technologies; the Clean Energy Innovation Research Centre, with laboratories across Canada, that research net-zero energy, critical minerals, advanced materials and industrial decarbonization; the TerraCanada hub, with facilities in Hamilton and Mississauga, Ontario, that supports research to transform Canada to a low-carbon

economy; and the Canadian Nuclear Laboratories in Chalk River, Ontario, which conducts research on nuclear science and technologies.

iii. **Furthering research and development on Carbon Capture, Utilization and Storage technology and innovation** and engaging stakeholders to explore deploying natural gas-based power generation with Carbon Capture and Storage.

3.2.6 Enhancing grid reliability and climate resilience to ensure electricity remains dependable in a changing world

Electricity infrastructure and operations need to strengthen reliability and resiliency to a growing range of threats, particularly extreme climate-related events, long-term shifts in climate, and cyber threats. Climate change is increasing the physical risks to Canada's electricity systems, with regional variations in impacts and hazards. These changes can result in risks to electricity generation (e.g., droughts affecting hydropower production), transmission and distribution infrastructure (e.g., ice storms, wildfires, and melting permafrost affecting grid operation), and increased consumer demand (e.g., heat waves that increase air-conditioning loads). Additionally, the electricity sector faces rising cybersecurity threats from state and non-state actors, including malicious cyberattacks and physical disruptions. Cyber incidents, such as ransomware or fraud, can cause significant disruptions, including widespread power outages. These cyber outages can be compounded when they intersect with climate-related events or other threats such as volatile fuel prices and supply changes. As efforts to enhance climate resilience often involve digitalization – such as using smart grids, Internet of Things (IoT) sensors, and automated systems to monitor and manage infrastructure – new vulnerabilities are being introduced and make robust cybersecurity measures essential to safeguard these systems. With infrastructure becoming more interconnected, aligning climate resilience efforts with cybersecurity strategies is crucial to effectively manage and mitigate emerging risks.

The Government of Canada will achieve this by:

i. **Advancing initiatives to enhance climate resilience in energy infrastructure** by building upon the *National Adaptation Strategy* (2023) and its *Adaptation Action Plan* (2023) and the *National Strategy for Critical Infrastructure* (2009). This includes building the capacity of electricity stakeholders to assess physical climate risks and identify adaptation measures through existing platforms, such as the multi-stakeholder Adaptation Plenary Energy and Infrastructure Working Groups, and the federal-provincial-territorial Electricity Working Group.

ii. **Continuing to advance the cybersecurity resilience of energy and electricity infrastructure** by building on ongoing collaborative efforts between the Government of Canada and energy sector stakeholders, including industry, governments, regulators, security agencies, and academia. These initiatives include leveraging established

relationships to: i) discuss and share cybersecurity threat intelligence, best practices, and knowledge, ii) undertake table-top exercises that aim to strengthen response and recovery efforts of stakeholders, iii) facilitate collaboration with the Canadian Centre for Cyber Security as the technical authority for cyber security guidance and advice in Canada, iv) support cybersecurity research and development initiatives that aim to address emerging cybersecurity challenges to the sector, and v) inform the development of security and energy policy that responds to the needs of the sector. To build on this progress, forthcoming policy and legislative tools will further bolster the Government of Canada's capacity and capability to support critical energy infrastructure resilience, including Bill C-26, (An Act Respecting Cyber Security (ARCS)), the *National Strategy for Critical Infrastructure* (2009) and the renewed *National Cyber Security Strategy*.

iii. **Assessing risks to electricity systems and operations from current and future climate change and cyber threats**, including via pathway assessment and energy roadmap development with provinces and territories. This aligns with two recommendations by the Canada Electricity Advisory Council [53].

iv. **Identifying opportunities for Distributed Energy Resources and emerging technologies**, such as vehicle-to-grid (V2X) / bi-directional charging, which can improve system resilience and provide a flexible bulwark against weather- or cyber-related disruptions and outages by allowing utilities to tap into additional resources when critically needed.

v. **Providing funding to strengthen the resilience and security of transmission and distribution assets**, including through the Utilities Support Stream of the Smart Renewable and Electrification Pathways Program, which supports utilities across the country with grid modernization projects and associated measures to ensure that project components and upgrades remain resilient to climate change's effects.

3.3 Focus Area 3: Collaborating on Tailored Approaches for Every Region

3.3.1 Federal convening power and supports will improve collaboration, planning, and coordination

No single level of government can achieve net-zero alone. Coordinated efforts with all levels of government and stakeholders in the electricity sector will be needed to unlock the tremendous opportunities available from advancing Canada's low-carbon economy. Existing and planned federal support mechanisms can be even more impactful if synergized with provinces and territories enacting changes to their own regulatory and market structures to take advantage of new technologies and the benefits of increased cooperation. As the Canada Electricity Advisory Council noted by way of an example, "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." [54]

The Government of Canada will achieve collaboration on tailored approaches for every region by:

i. **Partnering with provinces, territories, and Indigenous governments to identify and coordinate action on joint priorities**, while recognizing Canada's multi-jurisdictional energy landscape and diverse regional contexts. This includes dialogues, through existing platforms such as the Regional Energy and Resource Tables and the annual Energy and Mines Ministers' Conference. Other avenues include the federal-provincial-territorial Electricity Working Group, and similar fora that advance exchanges on regionally appropriate energy and natural resources, including nuclear. Recent examples of collaboration include the Government of Canada working with the Government of New Brunswick and investing up to $1 billion through the CIB and SREPs to support a portfolio of Indigenous-owned wind energy projects. There is also the recently announced $25 million investment by SREPs in the Neweg Energy wind project, a partnership between Natural Forces and New Brunswick's Mi'gmag First Nations to install six additional wind turbines near the existing Wocawson wind project in Sussex, New Brunswick. The federal government's convening power is a key tool for facilitating Indigenous leadership in the energy transition, as described by the Wah-ila-toos Indigenous Council under its *Accelerate Indigenous Leadership in the Energy Transition* theme.
ii. **Co-developing a framework for inter-regional electricity transmission projects** by building upon the Regional Electricity Cooperation and Strategic Infrastructure initiative and follow-on studies – if there is sufficient interest from provinces and territories. As recommended by the Canada Electricity Advisory Council, the framework would identify inter-regional electricity transmission projects by outlining governance, cost allocation, and funding component.
iii. **Supporting provincial and territorial development of pathway assessments and energy roadmaps** to study credible energy pathways and guide the development of net-zero energy systems, through Natural Resources Canada programming, as also recommended by the Canada Electricity Advisory Council. The federal government will work with provinces and territories on a bilateral basis to support these, including to help meet the requirements of the conditions for accessing the Clean Electricity Investment Tax Credit.

Box 11. Enabling offshore renewable energy in Nova Scotia and Newfoundland and Labrador

The offshore renewable energy sector presents a generational economic opportunity for Canada. The global offshore wind market alone is forecast to attract one trillion dollars in investment by 2040. Canada, in partnership with Nova Scotia and Newfoundland and Labrador, is creating the enabling conditions to support the emergence of offshore wind in Atlantic Canada. On October 3, 2024, Bill C-49: An *Act to amend the Canada-Newfoundland and Labrador Atlantic Accord Implementation Act* and *the Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act*, received Royal Assent. Developed in partnership with the Governments of Nova Scotia and Newfoundland and Labrador, this legislation will help unlock offshore renewable energy's enormous potential to generate thousands of jobs while attracting billions in investment and growing the economy. The Regional Assessments of Offshore Wind Development in Nova Scota and Newfoundland and Labrador are an important first step in identifying potential areas for offshore wind, as well as mitigation measures to inform future regulatory review processes.

3.3.2 Advancing economic reconciliation with Indigenous Peoples

In keeping with the recommendations of the Wah-ila-toos Indigenous Council, Indigenous participation and leadership in clean electricity projects can play a key role in advancing self-determination, Indigenous climate leadership, and economic reconciliation. It also provides a pathway for restitution and redress for past harms caused by energy projects that were developed without proper Indigenous consultation, consent, or inclusion. Further, it ensures that new projects are designed to meet community-identified needs, prioritize local benefits, and align with Indigenous values and priorities.

The Government of Canada will achieve this by:

i. **Providing financial and capacity-building support to Indigenous project development and ownership**.
   - The Indigenous Loan-Guarantee Program (ILGP) will provide up to an initial $5 billion in loan guarantees to unlock access to capital for Indigenous groups to acquire equity ownership in natural resource and energy projects including eligible electricity projects, thereby creating economic opportunities, and supporting their economic development priorities. Funding will also be provided for building capacity to assist eligible Indigenous groups in accessing investment analysis and due diligence resources required for these transactions. Clean electricity projects, notably transmission lines, are good candidates for the ILGP, with the potential to create economic benefits and a stable and predictable revenue stream for multiple Indigenous groups. For example, Ontario's Aboriginal Loan Guarantee Program enabled a consortium of 24 Indigenous groups to acquire an equity stake in the

Wataynikaneyap Transmission Project, a line that will connect remote Indigenous communities to the provincial grid. The federal government supported this partnership with a $1.6 billion investment.

- The Canada Infrastructure Bank (CIB), through its Indigenous Equity Initiative, lends to Indigenous groups to purchase equity stakes in infrastructure projects in which the CIB is also investing.
- The forthcoming Canada Greener Homes Affordability Program will include dedicated, distinctions-based funding to support Indigenous partners in realizing their self-determined energy efficiency priorities.
- The Smart Renewables Electrification Pathways (SREPs) program has a dedicated stream to support Indigenous participation in clean energy projects. The program provides funding for building Indigenous groups' capacity and predevelopment activities, as well as constructing clean energy projects. To date, SREPs has supported 48 capacity-building projects that are led by, or will benefit, Indigenous peoples, as well as 44 Indigenous-owned infrastructure deployment projects.
- The Northern Responsible Energy Approach for Community Heat and Electricity (REACHE) program supports and prioritizes Indigenous-led and -partnered clean energy projects in the North, through its targeted and flexible funding to meet the needs of Indigenous proponents. The program is instrumental in supporting early project stages such as conceptualization and feasibility, to planning work to de-risk projects and prepare for larger investments. Since 2016, the program has funded 226 projects and invested over $68 million in capacity building, renewable energy, and energy efficiency projects. These include: designing and installing a solar system in Nunatsiavut; technical studies to support wind turbines in Nunavik; energy conservation measures in Nunavut; an energy retrofit of a transitional home in the Northwest Territories; and energy audits in the Yukon.
- The Clean Energy for Rural and Remote Communities program provides funding for renewable energy and capacity building projects to reduce reliance on fossil fuels for heating and electricity in Indigenous, rural, and remote communities across Canada. The CERRC program's objective is to reduce GHG emissions and fossil fuel use by increasing the use of local renewable energy sources and related energy efficiency measures. This creates environmental, social, and economic benefits to support healthier and more sustainable communities.
- The Deep Retrofit Accelerator Initiative will continue to advance deep retrofits in Indigenous communities in the Prairie provinces and the Northwest Territories by offering project support services and financing, through projects with the Centre for Indigenous Environmental Resources and Four Winds & Associates.
- The Canada Greener Homes Initiative has committed $44 million in funding and signed agreements with 34 Indigenous communities for EnerGuide evaluations and

energy efficiency retrofits, to reach up to 6,500 homes through community-wide applications. Additional funding committed under this initiative includes the Energy Advisor Recruitment, Training and Mentorship Program, which was designed to build an inclusive, skilled energy efficiency workforce. Projects focused on training under-represented groups, including Indigenous Peoples, to improve inclusion and diversity in the energy advisor workforce.

ii. **Developing and publishing best practices, protocols, or norms for higher-quality federal programs and partnerships** between industry/utilities and Indigenous groups on clean energy projects. This includes providing guidance for project proponents to inform early and inclusive engagement and project consultation to achieve free, prior and informed consent – work that is being implemented under measure 32 in the Shared Priorities chapter of Canada's UN Declaration on the Rights of Indigenous Peoples *Action Plan*. [55] Assisting developers in understanding Indigenous rights, as well as in defining their duty to consult Indigenous Nations and communities, was also recommended by the Canada Electricity Advisory Council.

iii. **Working toward more harmonized approaches and supports for Indigenous engagement in electricity projects**. By building on existing efforts to reduce administrative barriers, and acting on recommendations from historical engagement processes, federal clean energy programs will continue to strengthen collaboration across departments and jurisdictions. This can help further reduce barriers for Indigenous groups or projects across multiple jurisdictions, as well as advance Indigenous training and employment conversations, and encourage meaningful approaches to Indigenous engagement and culturally relevant participation.

iv. **Continuing to advance the Indigenous Climate Leadership Agenda on a distinctions-basis, with First Nations, Inuit, and Métis**, which builds regional and national capacity and progressively vests authorities and resources for climate action in the hands of First Nations, Inuit, and Métis and representative organizations. The Government of Canada has received recommendations from Indigenous partners to implement a renewed, long-term partnership between Canada and Indigenous Peoples on climate.

v. **Continuing to work with the Wah-ila-toos Indigenous Council:** The Government of Canada has received the Council's recommendations via its final report, *Kinship and Prosperity: Proven Solutions for a Clean Energy Landscape* (November 2024). This area of action includes fostering collaboration across departments, provinces, territories, Indigenous communities, and utilities to support Indigenous leadership in clean energy and working toward free, prior, and informed consent in energy decisions. It also involves partnering with Indigenous Peoples to develop project criteria that prioritize community benefits and flexibility to ease accessibility constraints for Indigenous energy participation and ownership. The Government of Canada, in partnership with

the current Wah-ila-toos Indigenous Council, will explore opportunities for the Council to deepen their strategic role.

vi. **Accelerating Indigenous leadership in clean electricity projects**. The Government of Canada will continue moving toward more consistent project eligibility criteria that prioritize Indigenous community benefits and respect Indigenous self-determination. Federal project eligibility criteria will be developed by collating what we have heard from historical engagement, the Wah-ila-toos Indigenous Council's *Kinship and Prosperity* report, and ongoing collaboration with Indigenous partners.

3.3.3 Adapting approaches to the distinct circumstances of the North and remote areas

Capacity and resource issues have limited the economic participation of Northern and remote areas and Indigenous communities. Actions to address Northern infrastructure issues are often piecemeal and scattered across various federal measures and departments. A more comprehensive and focused approach for the territories is needed. Significant projects, such as the British Columbia – Yukon Transmission Line and the Taltson Hydro Expansion project have the potential to be transformative in terms of economic development, energy security, and social benefits. The Government of Canada's historical and recent investments in pre-development work for these projects, $40 million and $44 million respectively, is laying the foundation for this change. The Government of Canada recognizes that addressing the challenges of electricity systems in the North and remote areas requires a tailored and flexible approach to achieve outcomes that include energy security, energy affordability, energy sovereignty, economic reconciliation, and more regional economic development opportunities. These actions align with efforts to implement the goals and objectives of the Arctic and Northern Policy Framework, which was developed with Northern and Indigenous partners.

The Government of Canada will achieve this by:

i. **Developing a tailored approach to energy in the North**. The Government will work to strategically align investments across federal programs to address priorities identified by each Northern jurisdiction and explore options to pool or stack funding in ways that are responsive to Northern realities. Targeted support for energy system planning and management, and project-specific funding for feasibility, planning, and design will help advance northern energy priorities. Support to develop pathway assessments and energy roadmaps for each territory can guide the development of clear policy objectives on Northern energy, help to define key hurdles, and prioritize investments.

ii. **Leveraging existing initiatives to support shared regulatory priorities**. The Northern Regulatory Initiative provides supports for regional and cumulative effects/ baseline studies in Northern priority regions and Indigenous capacity to participate in impact assessment and permitting processes – all of which help to improve project

efficiency, federal regulatory coordination, and better decision-making. This includes working with territorial and Indigenous governments and partners through regulatory dialogues and other existing fora, such as the Regional Energy and Resources Tables, to identify shared issues and collaborate on transformative solutions for major clean growth projects to be advanced and built.

▸ Section 3 footnotes

4.0 Next Steps

Building a clean, reliable, affordable electricity system that supports a thriving economy is a vast undertaking and one of the greatest economic opportunities of our generation to ensure prosperity and energy security for Canada. The *Clean Electricity Strategy* outlines the key actions that the Government of Canada, in collaboration with provinces, territories, Indigenous partners, utilities, workers, and others, will pursue to decarbonize, expand, and modernize the electricity system, while acknowledging that there is still more to do, and that this work will continue to evolve.

Given the scale of the transformation ahead and the speed at which all partners must operate, implementing the Clean Electricity Strategy will take a coordinated, whole-of-government approach. The actions laid out in this Strategy will be implemented by a variety of federal players, and Canadians can expect to see progress in the short (2024-2026), medium (2027-2030), and long terms (2031+), as summarized in Table 1 below.

Work to implement the Clean Electricity Strategy is already underway and it will require coordination and collaboration with provincial and territorial partners, as well as Indigenous peoples. Examples of near-term priorities include:

- **Releasing a Discussion Paper on Interjurisdictional Interties for comment in 2025.**
- **Exploring opportunities to deepen the strategic role of the Wah-ila-toos Indigenous Advisory council.**
- **Advancing dialogues via the Regional Energy and Resource Tables and related fora on shared priorities to drive clean growth across the country.**
- **Advancing progress on workforce and skills development policy for the energy and electricity sectors through dialogue with workers and labour organizations, the upcoming work of the Sustainable Jobs Partnership Council and in the 2025 Sustainable Jobs Action Plan.**

Over the long-term, successful execution of the *Clean Electricity Strategy* requires communication and accountability. It may also require adjustments to account for a rapidly evolving context. In addition to the actions identified in the three focus areas:

- **Natural Resources Canada will begin annual reporting in the summer of 2025 to track and communicate progress on Canada's electricity system transformation and government actions to accelerate it.** This will include bringing together data on electricity system emissions, clean generation capacity, investments, and energy efficiency – as recommended by the Canada Electricity Advisory Council. Annual reporting will also enable consideration of emerging policy areas.
- **This Strategy will be subject to a three-year review process to ensure its continued relevance.** These reviews, to be started in 2028 – or sooner if required – will enable the Government of Canada to assess the effectiveness of its approach, adjust priorities, and address emerging policy areas.

For more information about the *Clean Electricity Strategy*, to submit your views on clean electricity in your region, or to provide input on the *Clean Electricity Strategy* for Canada, please contact Natural Resources Canada at: Cleanelectricitystrategy-Strategieelectricitepropre@nrcan-rncan.gc.ca.

Table 1. Strategy Actions, timeframes and Government of Canada leads

Table 1 presents the actions presented in the *Clean Electricity Strategy*, their timeframes for action, short (2024-2026), medium (2027-2030), and long terms (2031+), and the federal players that will implement them.

Focus Area 1: Growing the Grid and Managing Demand

3.1.1 Federal investments will provide widespread support to seize the clean electricity opportunity

Key Actions & Sub-Action(s)	Links to CEAC Relevant Recommendations	Links to Indigenous Council Recommendations	Timeframe	GoC Lead(s)
i. Encouraging capital investments through the Clean Economy Investment Tax Credits	1, 18		2024-2034	Finance
ii. Leveraging strategic financing via the CIB and the Canada Growth Fund		Theme 6	2024+	HICC, Finance
iii. Using targeted programming to support the unique needs of sectors or projects of national and strategic significance.	9		2024-2030	NRCan

3.1.2 Helping to improve energy efficiency and making demand more flexible will reduce required investments and save money

Key Actions & Sub-Action(s)	Links to CEAC Relevant Recommendations	Links to Indigenous Council Recommendations	Timeframe	GoC Lead(s)
i. Delivering the next phase Canada Greener Homes Initiatives	22		2024-2030	NRCan

Key Actions & Sub-Action(s)	Links to CEAC Relevant Recommendations	Links to Indigenous Council Recommendations	Timeframe	GoC Lead(s)
ii. Prioritizing Demand Side Management and energy efficiency in federal supports	25		2024-2026	NRCan
iii. Modernizing the Energy Efficiency Act	26		2024-2026	NRCan

3.1.3 Supporting codes and standards modernization, development and adoption

Key Actions & Sub-Action(s)	Links to CEAC Relevant Recommendations	Links to Indigenous Council Recommendations	Timeframe	GoC Lead(s)
i. Continuing to support ambitious building adoption by jurisdictions	27	Theme 6	2024+	NRCan
ii. Supporting the development and harmonized adoption of electrical codes and standards	17	Theme 6	2024+	NRCan

Key Actions & Sub-Action(s)	Links to CEAC Relevant Recommendations	Links to Indigenous Council Recommendations	Timeframe	GoC Lead(s)
iii. Seeking to leverage investments announced in Canada's Housing Plan to advance more ambitious buildings codes and broader energy efficiency design options	24	Theme 6	2024+	NRCan, HICC

Focus Area 2: Providing Policy Certainty and Smoothing the Path

3.2.1 Policy Certainty: Regulations to set the guardrails for getting to net-zero emissions

Key Actions & Sub-Action(s)	Links to CEAC Relevant Recommendations	Links to Indigenous Council Recommendations	Timeframe	GoC Lead(s)
i. Maintaining existing regulations to phase out coal by 2030	1		2024-2035	ECCC
ii. Driving decisions that reduce GHG pollution under the Clean Electricity Regulations	1		2035+	ECCC

Key Actions & Sub-Action(s)	Links to CEAC Relevant Recommendations	Links to Indigenous Council Recommendations	Timeframe	GoC Lead(s)
iii. Continuing to harness the market power of a price signal to drive down emissions in the electricity sector	1		2024+	ECCC

3.2.2 Bolstering intra- and inter-governmental processes will help ensure a cohesive approach to reviewing and permitting projects

Key Actions & Sub-Action(s)	Links to CEAC Relevant Recommendations	Links to Indigenous Council Recommendations	Timeframe	GoC Lead(s)
i. Better coordinating and monitoring federal project reviews through the new federal Permitting Coordinator	10		2024+	NRCan, IAAC, PCO
ii. Working with provinces and territories to advance regulatory efficiency	12	Theme 4	2024+	NRCan, IAAC, PCO
iii. Continue to support electricity sector projects through the work of the Clean Growth Office and the Clean Growth Hub	9, 16	Themes 1, 2, 4	2024+	NRCan, PCO, IAAC

Key Actions & Sub-Action(s)	Links to CEAC Relevant Recommendations	Links to Indigenous Council Recommendations	Timeframe	GoC Lead(s)
iv. Clarifying Indigenous engagement and consultation requirements for industry and developers	14	Themes 3, 5, 6	2024+	NRCan, PCO, IAAC
v. Rationalizing, decarbonizing, and electrifying federal government operations	28		2024+	NRCan, TBS
vi. Exploring novel approaches to reviews	11, 13	Theme 1	2028+	PCO, PSPC

3.2.3 Strengthening and modernizing Canada's grid infrastructure will support the shift to net-zero emissions

Key Actions & Sub-Action(s)	Links to CEAC Relevant Recommendations	Links to Indigenous Council Recommendations	Timeframe	GoC Lead(s)
i. Supporting strategic electricity transmission and major clean electricity projects.	16	Theme 3	2024+	NRCan

Key Actions & Sub-Action(s)	Links to CEAC Relevant Recommendations	Links to Indigenous Council Recommendations	Timeframe	GoC Lead(s)
ii. Aligning the actions of Federal Crown Corporations with federal climate objectives.	28	Theme 3	2024+	PCO, TBS
iii. Aligning federal mandates and authorities with net-zero goals and federal climate objectives	4, 28		2024+	TBS
iv. Taking into consideration net-zero goals and priorities in the context of financial, labour, and trade policies	15		2024+	NRCan
v. Targeting programming to enable market and regulatory innovation for utilities and establishing fora for convening and knowledge-sharing	3	Themes 3, 4	2024-2030	NRCan

Key Actions & Sub-Action(s)	Links to CEAC Relevant Recommendations	Links to Indigenous Council Recommendations	Timeframe	GoC Lead(s)
vi. Explore long-term sustainable funding sources and mechanisms to support a tailored approach to energy in the North	21	Themes 3, 4, 6	2024-2030	NRCan, CIRNAC
vii. Addressing data and regulatory barriers to enable greater DER uptake by users that both produce and consume energy.	7, 17	Themes 2	2024-2030	NRCan

3.2.4 Improving data sharing and monitoring will facilitate better decision-making

Key Actions & Sub-Action(s)	Links to CEAC Relevant Recommendations	Links to Indigenous Council Recommendations	Timeframe	GoC Lead(s)
i. Supporting a more cohesive approach across the federal government to develop and implement initiatives to achieve greater data/modelling transparency for all jurisdictions in Canada	7	Theme 2	2024-2030	NRCan

Key Actions & Sub-Action(s)	Links to CEAC Relevant Recommendations	Links to Indigenous Council Recommendations	Timeframe	GoC Lead(s)
ii. Establishing, tracking, aggregating, and communicating progress indicators on electricity system decarbonization	8	Theme 2	2024+	NRCan, Statistics Canada
ii. Improving labour market data collection, tracking, and analysis in the electricity and energy sectors	2, 3 and 15	Theme 2	2024+	NRCan, ESDC, Statistics Canada
iii. Continuing to support data collection to assess regional climate hazards and physical climate risks to electricity infrastructure and operations		Theme 2, 3	2024+	NRCan, ECCC, PSC
iv. Leveraging existing actions to ensure robust accountability on energy efficiency measures	23		2024+	NRCan

3.2.5 Advancing electricity research and development will facilitate long-term electricity system transformation

Key Actions & Sub-Action(s)	Links to CEAC Relevant Recommendations	Links to Indigenous Council Recommendations	Timeframe	GoC Lead(s)
i. Continuing to support electricity-related research, development and demonstration projects	21	Themes 1, 3, 4, 6	2024-2030	NRCan
ii. Supporting electricity-related research and development at federal labs			2024-2030	NRCan
iii. Supporting Furthering research on Carbon Capture, Utilization, and Storage technology innovations			2024-2030	NRCan

3.2.6 Enhancing electricity system reliability and climate resilience

Key Actions & Sub-Action(s)	Links to CEAC Relevant Recommendations	Links to Indigenous Council Recommendations	Timeframe	GoC Lead(s)
i. Advancing initiatives to enhance climate resilience in energy infrastructure		Themes 1, 2	2024+	NRCan, ECCC, PSC, HICC

Key Actions & Sub-Action(s)	Links to CEAC Relevant Recommendations	Links to Indigenous Council Recommendations	Timeframe	GoC Lead(s)
ii. Continuing to advance the cybersecurity resilience of energy and electricity infrastructure			2024+	NRCan, PSC
iii. Assessing risks to electricity systems and operations from current and future climate change and cyber threats	2, 3	Themes 3, 6	2024-2030	NRCan
iv. Identifying opportunities for DERs and emerging technologies			2024-2030	NRCan
v. Providing funding to strengthen the resilience and security of transmission and distribution assets		Theme 3	2024-2030	NRCan

Focus Area 3: Collaborating on Tailored Approaches for Every Region

3.3.1 Federal convening power and supports will improve collaboration, planning, and coordination

Key Actions & Sub-Action(s)	Links to CEAC Relevant Recommendations	Links to Indigenous Council Recommendations	Timeframe	GoC Lead(s)
i. Partnering with provinces, territories, and Indigenous governments to identify and coordinate action on joint priorities	5, 20	Themes 3, 4, 5, 6	2024-2030	NRCan
ii. Co-developing a framework for inter-regional electricity transmission projects	19	Theme 4	2024+	NRCan
iii. Supporting provincial and territorial development of pathway assessments and energy roadmaps	2, 3, 6	Theme 4	2024+	NRCan

3.3.2 Advancing economic reconciliation with Indigenous Peoples

Key Actions & Sub-Action(s)	Links to CEAC Relevant Recommendations	Links to Indigenous Council Recommendations	Timeframe	GoC Lead(s)
i. Providing financial and capacity-building support to Indigenous project development and ownership	20	All Themes	2024-2030	NRCan, CIRNAC

Key Actions & Sub-Action(s)	Links to CEAC Relevant Recommendations	Links to Indigenous Council Recommendations	Timeframe	GoC Lead(s)
ii. Developing and publishing best practices, protocols, or norms for higher-quality federal programs and partnerships	14	Themes 1, 2	2024-2030	NRCan, CIRNAC
iii. Working toward more harmonized approaches and supports for Indigenous engagement in electricity projects	20	Theme 3	2024+	NRCan, CIRNAC
iv. Continuing to advance the Indigenous Climate Leadership Agenda on a distinctions-basis, with First Nations, Inuit, and Métis		Themes 4, 6	2024+	CIRNAC, ECCC
v. Continuing to work with the Wah-ila-toos Indigenous Council		All Themes	2024-2030	NRCan, CIRNAC, ISC

Key Actions & Sub-Action(s)	Links to CEAC Relevant Recommendations	Links to Indigenous Council Recommendations	Timeframe	GoC Lead(s)
vi. Accelerating Indigenous leadership in clean electricity projects		Themes 4, 6	2024+	NRCan, CIRNAC

3.3.3 Adapting approaches to the distinct circumstances of the North and remote areas

Key Actions & Sub-Action(s)	Links to CEAC Relevant Recommendations	Links to Indigenous Council Recommendations	Timeframe	GoC Lead(s)
i. Developing a tailored approach to energy in the North	21	Theme 2	2024-2030	CIRNAC, NRCan
ii. Leverage existing initiatives to support shared regulatory priorities			2024-2030	CIRNAC, CanNor

Legend

Departments and agencies	Abbreviations
Canadian Northern Economic Development Agency	CanNor
Crown-Indigenous Relations and Northern Affairs Canada	CIRNAC
Employment and Social Development Canada	ESDC
Environment and Climate Change Canada	ECCC
Housing, Infrastructure and Communities Canada	HICC
Impact Assessment Agency of Canada	IAAC
Indigenous Services Canada	ISC

Departments and agencies	Abbreviations
Privy Council Office	PCO
Public Service Commission of Canada	PSC
Public Services and Procurement Canada	PSPC
Treasury Board Secretariat	TBS

Annex 1 – Canada Electricity Advisory Council Recommendations

From the Canada Electricity Advisory Council Final Report *Powering Canada: A blueprint for success* (2024).

1. Expedite clarification of critical electricity policy rules
2. Encourage energy roadmaps
3. Encourage pathway assessments to inform energy roadmaps
4. Align mandates of relevant authorities with net-zero goals
5. Prioritize flexibility in policy making
6. Focus ITC conditions on energy roadmaps
7. Drive open and transparent data and modelling
8. Establish indicators to track national progress
9. Designate an accountable champion to accelerate electricity project approvals
10. Streamline scoping of clean electricity project reviews
11. Move to a compliance-based approvals framework where possible
12. Conclude equivalency agreements to limit duplication with provinces
13. Proactively develop federal crown lands
14. Enhance clarity and awareness of expectations for Indigenous consultations
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
18. Align ITC programming with net-zero objectives
19. Construct a framework to support inter-regional electricity transmission projects
20. Advance economic reconciliation with Indigenous Nations
21. Support the North and remote communities
22. Expand funding for energy efficiency programs directed at lower-income Canadians
23. Create an energy efficiency accountability framework
24. Link federal investments in housing to the highest energy-saving standards
25. Prioritize demand management in federal supports
26. Update appliance and equipment standards

27. Advance building code modernization
28. Expand the Greening Government Strategy

Annex 2 – Summary of Wah-ila-toos Indigenous Council Recommendations

The recommendations summarized below can be found in full in the Wah-ila-toos Indigenous Council's Report, *Kinship and Prosperity: Proven Solutions for a Clean Energy Landscape* (2024).

Ease Access to Funding

- Integrate funding streams across departments
- Create stackable, multi-year funding opportunities
- Accelerate review processes through automation
- Scale due diligence requirements to project size
- Establish the "Accelerated Endorsement Protocol"
- Use distinctions-based outreach strategies

Develop Consistent Eligibility Criteria that Prioritizes Indigenous Community Benefits

- Standardize project eligibility across all departments
- Weigh projects on community ownership and lasting benefits
- Ground processes in Free, Prior and Informed Consent (FPIC)
- Develop a guide for collaboration with external consultants
- Tailor eligibility criteria to community and project context
- Ensure project funding decisions consider all other community projects
- Fund communities directly
- Share all project data with impacted Indigenous communities
- Establish evidence-based market assessment metrics
- Leverage post-project evaluations to filter future applications
- Centralize community energy planning resources at Indigenous Services Canada (ISC)
- Incorporate Indigenous Knowledge into community energy planning

Advance Inclusive Opportunities and a Just Transition

- Connect with and fund communities beginning their energy transition
- Increase awareness of funding opportunities through targeted events
- Develop a community readiness scale and adapt all program materials accordingly
- Ensure battery innovation will meet unique community needs

Accelerate Indigenous Leadership in the Energy Transition

- Include timeline flexibility, maintenance, remediation, and disposal costs in funding
- Renew and expand the Indigenous Off-Diesel Initiative with sustained funding
- Convene Indigenous Peoples, utilities, provinces, and territories to increase coordination

Respect Indigenous Self-Determination by Prioritizing Indigenous-led Decisions

- Act on recommendations from past engagement processes before duplicating efforts
- Comply with the UNDRIP Act Action Plan (items 66 and 67) with any existing, new or planned initiatives in the energy sector
- Uplift and promote Indigenous leaders in a Just Transition
- Prioritize Indigenous-Federal joint decision-making as a foundational principle

Sustainably Fund Indigenous Participation

- Be transparent about fossil fuel subsidies
- Divert fossil fuel subsidies to a sovereign wealth fund for Indigenous clean energy projects
- Develop a fund for restitution from historical, large-scale energy projects developed without informed consent
- Establish funding opportunities that are independent from electoral cycles
- Guarantee Indigenous representation in decision-making in all orders of government
- Co-develop a plan with the Indigenous Council to sustainably fund Indigenous climate action

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