CSA PUBLIC POLICY CENTRE

A Renewed Approach to Energy Security in Canada

June 2026

CSA Public Policy Centre

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- Advancing environmental sustainability and climate resilience

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Acknowledgements

CSA Public Policy Centre wishes to thank Khiran O'Neill and Noah Zon from Springboard Policy for their contributions to this report.

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Executive Summary

Canada's abundance of energy has long been a source of strength, powering our communities and our economy. Even as the world around us changes, energy security remains crucial for Canadian wealth, prosperity and public safety. Yet despite being one of the world's largest energy producers, the overall security of Canadian energy is not a given, particularly during this period of instability. To adapt to our rapidly evolving energy landscape, Canada needs a new approach to energy security that focuses on availability, reliability and resilience.

Energy security is not just about consistent supply. It is about the entire energy value chain—and factors beyond it as well. It is also increasingly complex and multidimensional, shaping (and shaped by) more factors than ever before. In many cases, this means a range of new opportunities. It also means new threats, including:

- **Trade and economic volatility** influencing energy production, prices and availability
- **Geopolitics** leading to unexpected impacts on trade, prices and energy production
- **Climate change and natural disasters** that pose risks to safety and energy infrastructure
- **Evolving technologies** that increase cybersecurity risk and supply chain complexity
- **Rapid growth in demand** that makes future energy needs difficult to predict
- **Infrastructure planning and gaps** that risk energy infrastructure failure and damage
- **Workforce and skills shortages** that reduce expertise and limit capacity

It is crucial that Canada build resilience to address these new and evolving pressures. Yet four main barriers limit Canada's policy response:

1. Distributed governance across departments
2. Distributed governance across jurisdictions
3. Market and infrastructure fragmentation
4. Conflicts between short- and long-term planning

While these are complex barriers, they can be overcome with concerted, collaborative effort. Across each of these barriers, this report identifies policy directions that would serve to minimize their effects.

Distributed governance across departments

Energy security is a shared responsibility across numerous departments, which can lead to inefficiencies, tensions between objectives and slow development.

Policy recommendations:

- Implement a new federal energy security policy
- Develop and use a national definition of energy security that encompasses availability, reliability and resilience
- Develop an interdepartmental committee focused on enabling energy security collaboration

Distributed governance across jurisdictions

Canada's division of power and other constitutional obligation, including Indigenous rights and interests, can lead to complexity in managing energy security collectively.

Policy recommendations:

- Integrate provincial electricity grid plans into a coordinated national grid plan, in partnership with provincial and federal governments and Indigenous partners
- Strengthen alignment between provinces, territories and the federal government on regulations for emerging technologies
- Develop region- or resource-specific committees to address energy security gaps
- Drive improved energy security on the international stage

Market and infrastructure fragmentation

Canada's fragmented energy markets reduce incentives for co-operation and can make infrastructure development less efficient.

Policy recommendations:

- Strengthen interprovincial grid interties and ensure clear funding accountabilities
- Develop and implement standards to enable interjurisdictional interoperability
- Develop and implement standards to determine reliability measures for energy systems

Short- versus long-term planning

A focus on the immediate expansion of energy availability can risk diverting capital from long-term infrastructure decision-making, while election cycles can interfere with the development of long-term energy planning.

Policy recommendations:

- Develop and implement standards to facilitate availability across emerging needs and technological innovation
- Support the deployment and adoption of new energy technologies with funding

Finally, **there are opportunities to maximize the use of standards to drive interoperability and reduce fragmentation.** They include prioritizing resources and collaboration to develop and implement standards and related solutions to navigate emerging technologies, define energy security and strengthen the energy security workforce. In addition, these efforts could support improved coordination, faster infrastructure delivery and measurable resilience outcomes.

Introduction

Adapting to a changing energy security landscape

Canada benefits from an abundance of natural resources, significant energy production capacity and a skilled energy workforce. This abundance has long provided a sense of security. But having abundant resources is only one factor. Dramatic changes, in terms of both the global geopolitical environment and technological change, mean that energy resource abundance alone is no longer sufficient for a truly secure energy system. Energy security now encompasses an increasingly broad set of concerns, across the energy spectrum and life cycle.

Energy security has wide-reaching implications. When our energy system is secure, it generates wealth, prosperity and safety for Canadians and our global allies. When energy security is under threat, it undermines public safety, economic growth and societal well-being.

The energy security landscape is rapidly changing, and new risks and challenges are emerging. New pressures—across energy demands, policy pressures, production and distribution approaches, and risks in the operating environment—put Canada's energy security at risk. There are now unprecedented challenges for energy

security from a range of areas that have not traditionally been considered part of energy security, placing pressure on our policy and governance approaches.[1] In particular, recent geopolitical events continue to exert significant pressures on energy security in Canada and around the world. As a result, this paper does address geopolitical threats to energy security, although it primarily focuses on the domestic issues more closely related to CSA's expertise.

As energy systems have become more complex and integrated, new policy approaches for energy security are needed. To adapt to the evolving landscape, **Canada needs a renewed, comprehensive approach to energy security that focuses on availability, reliability and resilience** of the energy systems that power Canada today and into the future.

This report focuses on Canada's energy security imperative. It includes:

1. A summary of the state of energy in Canada
2. A description of prominent threats to energy security in Canada
3. A discussion of current approaches to energy security in Canada and key barriers to strengthening them
4. Potential approaches to enable a more comprehensive, focused energy security system for Canada

Defining energy security

A comprehensive approach to energy security begins with a cohesive understanding of it. Energy security can be best understood across three pillars. This concept of energy security encompasses the full spectrum of energy sources, and covers the entire energy value chain including production, transmission, distribution, storage and end use. This is a framework that can be used to consider energy security outcomes, rather than a single static definition. Finally, while these pillars (and this report) focus on domestic outcomes, they do not exist in a vacuum—they are inherently connected to global markets and geopolitics.

1) AVAILABILITY
Sufficient supply of energy

2) RELIABILITY
Energy can be delivered when and where it is needed

3) RESILIENCE
The energy system can withstand and recover from disruptions

The state of energy in Canada

Canada's global energy position

Canada is a global energy leader, placing sixth in the world in overall energy production.[2] Compared to its G7 peers, Canada produces the most uranium and hydroelectricity,[3] and the second most crude oil[4] and natural gas.[5] As a result, energy is a major economic driver in Canada, contributing nearly one-tenth of Canada's GDP in 2024, and nearly one-third (worth $205 billion) of all Canadian goods exports, based on Statistics Canada estimates.[6]

Canada's energy sector is closely tied to the United States. The vast majority of energy exports (89% in 2024) are to the United States,[7] including about 97% of Canada's crude oil exports.[8] Our electricity systems are especially integrated, not just because of shared markets and geography, but because of shared electric grids—98% of Canada's electric systems are connected to the North American bulk power system.[9]

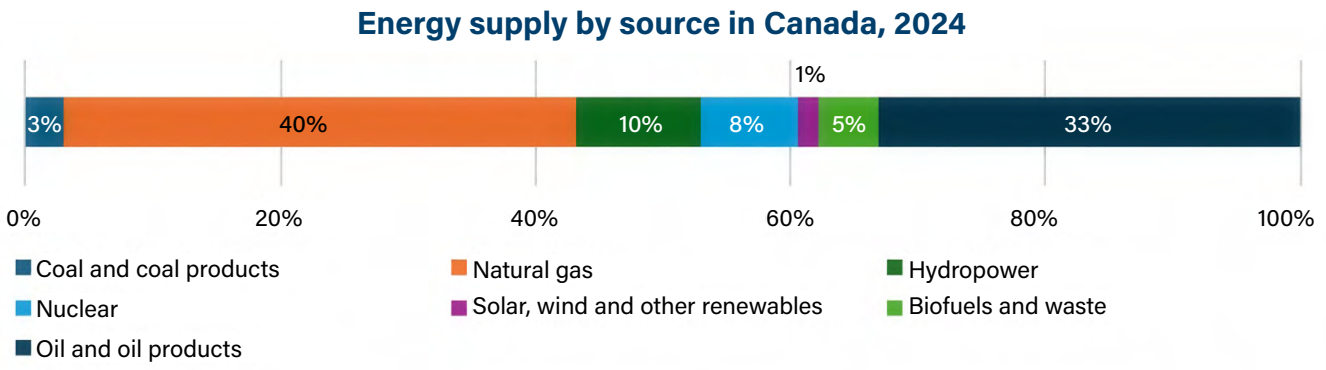
Canadian energy production and consumption

With increasing demand for low-carbon energy sources and the development of new technologies, Canada's energy supply and use mix is evolving. At the same time, our overall energy supply remains driven by oil and gas. About three quarters (73%) of Canada's energy supply is from oil, natural gas and related products, while about 3% is coal, 8% is nuclear and 17% is from renewable sources (see Figure 1).[10] About 80% of this energy is consumed directly as fuel (e.g., for heating and transportation), while electricity accounts for about 18% of total end-use energy demand.[11]

Alberta dominates oil and gas production. In 2023, the province produced 84% of Canada's crude oil and 61% of its natural gas. British Columbia accounted for another 37% of natural gas production.[12]

Electricity generation has a different profile. It is more evenly distributed compared to oil and gas, though Quebec produces much more per capita than other provinces and territories. In 2021, Quebec produced 34% of Canada's electricity, Ontario produced 24%, and BC and Alberta produced around 11% each.[13] Approximately 80% of Canada's electricity is from non-greenhouse gas emitting sources, largely hydroelectric.[14]

Figure 1: Energy supply by source in Canada, 2024 [15]



> About two-thirds of households with furnaces in Atlantic Canada use heating oil, compared to less than 2% in Ontario, and none in Western Canada.[17]

Each province and territory has a unique energy landscape. Notably, there are vast regional disparities in energy mixes, and accordingly in costs and use. For example, in Quebec, where hydroelectric power is plentiful, electricity prices are less than half those in Prince Edward Island, and Quebecers use more than twice as much electricity per capita as Ontarians.[16] About two-thirds of households with furnaces in Atlantic Canada use heating oil, compared to less than 2% in Ontario, and none in Western Canada.[17]

Energy security policy in Canada

Different energy mixes and use patterns, as well as unique political environments, mean that each province and territory has different energy priorities, objectives, and approaches to policy and governance. Notably, the form of energy markets differ—from open competition and significant private sector roles and Crown utilities (e.g., electricity and gas in Alberta) to single Crown corporations (e.g., electricity and gas in Manitoba and Saskatchewan). These factors can influence jurisdictional approaches to energy security and the levers available to influence outcomes.

Emerging challenges threatening Canada's energy security

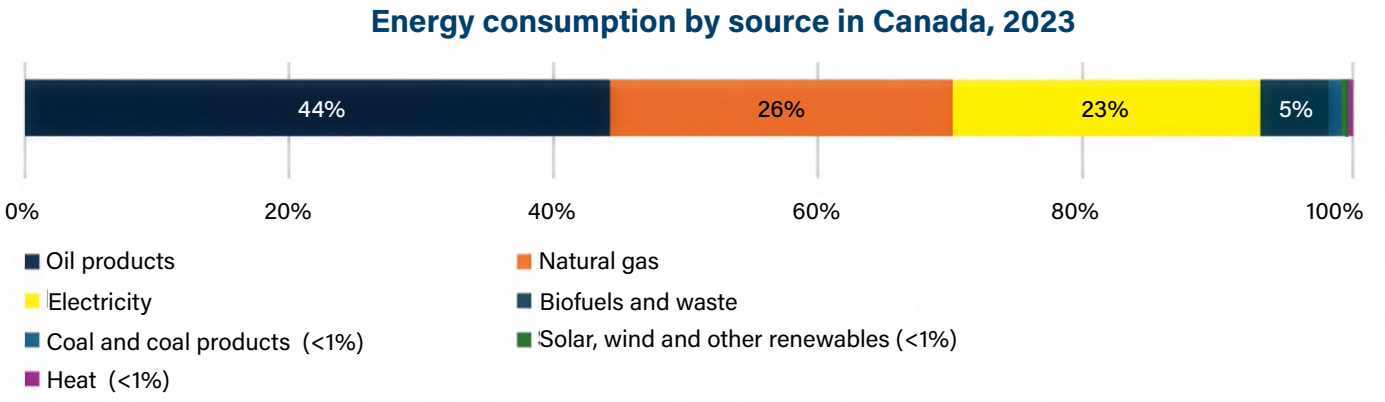
Energy security is no longer just about consistent supply. It is increasingly complex and multidimensional, shaping—and shaped by—more factors than ever before. Energy security outcomes are now influenced or even dictated by cybersecurity, climate change, the labour force and economic development decisions. Conversely, energy security decisions are now also part of broader policy choices that can impact everything from international relations to artificial intelligence (AI) governance. As a result, regulators and systems operators are now being called on to consider new policy objectives beyond their traditional mandates.

This section outlines emerging challenges for energy reliability, availability and resilience. They represent not only straightforward threats, but also positive developments (e.g., the development of new energy storage technologies) that create new pressures and opportunities. These challenges are closely interrelated, and any approach to navigating them is likely to involve inherent trade-offs.

Trade and economic volatility

Recent Canada-U.S. tensions demonstrate that stability is not a given—economic shocks can significantly impact energy security. For example, Deloitte estimated that a 25% U.S. tariff on Canadian imports (and reciprocal

Figure 2: Energy consumption by source in Canada, 2023[18]



Canadian tariffs) would reduce mining, oil and gas output by 6.8%.[19] Tariffs that increase the price of materials like steel and aluminum make infrastructure development for energy production and transmission more expensive.[20] The deep integration of Canada's energy system with the United States intensifies the risk caused by the current unpredictability of American trade and foreign policy.[21]

Beyond the Canada-U.S. relationship, energy security faces other economic pressures. Conventional fuels like oil and gas that trade globally are especially subject to global price fluctuations that can affect domestic energy prices and economics significantly.[22] Canadian consumers are also affected by these volatile "global" prices for energy.[23] Similarly, export and trade goals can be at odds with domestic supply stability. While energy exports form an important part of Canada's economy, an emphasis on exports can in some cases risk reducing focus on domestic energy infrastructure. For example, north-south connection with U.S. grids has arguably come at the cost of less investment for east-west interprovincial grids.[24, 25]

Geopolitics

Integrated supply chains and economic interdependence mean that geopolitical events can have unexpected impacts on the availability and reliability of energy imports, export markets, and domestic prices and production. While at a macro level Canada has sufficient resources to be largely energy self-reliant, the practical considerations of energy markets and energy systems make Canada's energy security susceptible to geopolitics. Some private firms operating in Canada (many of which are influenced by foreign ownership[26]) may be more driven to maximize global market optimization and shareholder priorities than to strengthen Canadian energy security. This can expand Canada's vulnerability to geopolitical shocks or threats.

In particular, global conflicts often involve oil and gas, indirectly influencing Canadian energy. Following Russia's 2022 invasion of Ukraine, Canada banned imports of Russian oil[27] and announced that it would increase oil and gas production to displace Russian fuels.[28] While global physical production was not reduced, domestic oil prices surged.[29] Major geopolitical events can quickly alter the availability and even reliability of domestic energy by changing prices, supply chains and trade relations. For example, the war in Iran immediately impacted global oil prices in early 2026.[30] Closer to home, pipelines from Alberta to eastern Canada run through the United States, which poses a risk.

Climate change and natural disasters

As climate change accelerates, extreme weather and natural disasters will become more prevalent, posing increased risks to energy infrastructure. Canada has already seen numerous instances of natural disasters affecting energy supply. They include the 2021 Trans Mountain Pipeline shutdown caused by an "atmospheric river" in BC,[31] the 2022 electric grid failure in PEI caused by Hurricane Fiona,[32] and the disruption of oil and gas production in Alberta due to wildfires in 2016,[33] 2023[34] and 2025.[35]

Research from the North American Electric Reliability Corporation (NERC) found that "Canadian [electricity] systems are increasingly vulnerable to extreme weather."[36] Events such as these threaten public safety and interfere with energy supply. Grid outages during extreme heat or cold, for example, can be life-threatening. "Hardening" or strengthening transmission lines will be necessary to protect against extreme weather,[37] but doing so will likely prove very costly.[38]

Climate change can also harm energy availability and reliability, particularly in the case of renewables. For example, droughts in Canada have reduced the productivity of hydroelectric dams.[39] Heat waves can reduce the efficiency of solar panels by 10% to 25%,[40] while hail and ice can damage wind turbines and solar panels.[41] As threats from climate change become more common, the reliability of our energy systems will become even more crucial. As climate-related threats grow, avoiding disruptions entirely will no longer be possible. Instead, energy systems must be adapted to withstand and recover more quickly from disruptions.

Evolving technologies

New technologies are transforming the energy landscape, and in many ways are even improving energy security. Distributed energy resources (DERs) like microgrids and solar power have been shown to increase energy system resilience by reducing the duration of power outages, while also contributing to emissions reductions.[42] Advances in battery technology and energy storage also help to strengthen resilience and reliability. New battery technologies bring energy storage capacity to minimize the intermittency challenges of renewables like wind and solar, and can make energy grids more resilient, flexible and reliable.[43]

Hydrogen fuel cell technology could also prove transformative, allowing significant energy storage capacity.[44] Small modular reactors (SMRs) have potential to provide reliable power to remote or off-grid areas, reducing reliance on diesel.[45] Digitization and increased end-user control (e.g., through Internet-of-Things devices like smart thermostats) can make energy systems more convenient, efficient and effective for consumers and providers alike.

However, with new possibilities come new potential risks. Notably, digitization of energy infrastructure without effective safeguarding and planning can increase cybersecurity risk, including ransomware attacks and state-sponsored espionage,[46] or system failures caused by software bugs or errors. The convergence of information technology (IT) with physical energy assets means greater risk that digital vulnerabilities can lead to infrastructure damage or interference.

This is a problem that appears to be growing. The International Energy Agency (IEA) found that in 2024, "a typical energy utility was subject to over 1,500 attempted cyberattacks per week – triple the number only four years earlier."[47] The federal government has demonstrated recognition of this threat with the introduction of Bill C-8, which aims to strengthen cybersecurity in a range of federally regulated sectors, including energy.[48]

Meanwhile, the use of modern energy storage technologies presents a new energy security risk, in the form of dependence on critical mineral development and supply chains. Canada has a wealth of mineral supply required for batteries, but lacks fully mature battery manufacturing capacity, meaning we remain somewhat dependent on global supply chains.[49] The continued development of hydrogen fuel cell technology also poses new critical mineral and supply chain challenges.[50]

SMRs also introduce new energy security challenges. Many SMRs require enriched uranium fuel, yet there are no uranium enrichment facilities in Canada. The major supplier of a common type of enriched uranium (high-assay low-enriched uranium) globally is Russia.[51, 52] SMRs also face the same digitization challenges as other energy technologies, meaning they depend not only on physical security but cybersecurity as well.[53]

Rapid growth in demand

The emergence and adoption of new technologies, including electric vehicles (EVs) and AI, will increase energy demand, especially for electricity. Estimates from Goldman Sachs suggest that data centres will use 8% of all U.S. electricity by 2030,[54] while data centres capacity in Canada is expected to grow by more than 50% by 2029.[55] BC Hydro expects electricity demand to grow by 15% by just 2030.[56]

Spikes in energy demand, particularly if localized, can stress local grids and reduce availability. Given that data centres increase localized demand, it is crucial that grids and energy infrastructure are protected and strengthened to accommodate growth in demand. Some provinces have already begun to implement legislation that reviews or limits new grid connections from data centres.[57, 58]

EVs and other new technologies are intended to reduce emissions, but the timing, scale and geography of their impact on future energy supply and demand is unclear. On one hand, EV batteries will soon be capable of serving as an emergency backup energy supply for buildings, or even of balancing energy demand.[59] But because the rate of EV uptake is unclear, it is proving difficult to predict how they might alter future energy demand. "Large step loads"—projects that connect to the grid all at once in large blocks—can alter demand rapidly, potentially causing capacity shortfalls. Ontario's Independent Electricity System Operator highlights that "market forces, geopolitical conditions, and other uncertainties" influencing large step loads make it difficult to forecast future energy needs related to EVs and data centres.[60]

> **Estimates from Goldman Sachs suggest that data centers will use 8% of all U.S. electricity by 2030,[54] while data centre capacity in Canada is expected to grow by more than 50% by 2029. [55] BC Hydro expects electricity demand to grow by 15% by just 2030. [56]**

Infrastructure planning and gaps

To remain reliable and resilient, energy infrastructure needs to be regularly expanded, maintained and upgraded. Yet Canada faces multifaceted infrastructure gaps and deterioration, along with a lack of long-term infrastructure planning.[61]

In particular, a significant portion of transmission and distribution infrastructure in Canada is aging.[62, 63] The Enbridge Line 5 pipeline in Ontario, which was built in 1953, has prompted concerns of a spill in Lake Michigan.[64] The 1955 Hampstead electrical substation in Quebec, targeted since 2018 for a replacement that has not yet happened, caused a 20,000 person electricity outage in Montreal in early 2026.[65] Issues like these impact energy security by risking infrastructure failure. Further, infrastructure failure can risk public safety through disrupted energy supply or direct physical harm such as spills or fires.

Infrastructure and energy planning cannot be divorced from one another—the success of energy security often depends on physical infrastructure. For instance, the Trans Mountain Pipeline expansion enabled Canadian oil and gas to be exported more widely, reducing dependence on exports to the United States.[66] Meanwhile, the deployment of SMRs in Canada's North would necessitate the use of improved telecommunications infrastructure that does not yet exist there.[67] As of 2020, no communities in Nunavut had access to internet speeds that met the government's fibre broadband service targets for all Canadians.[68] More broadly, existing telecommunications infrastructure

in Canada is vulnerable to interception, tracking or interference, making energy technologies that rely on highly secure networks vulnerable as well.[69]

Indigenous and Northern communities face some of the most significant infrastructure gaps in the country, resulting in lessened energy security.[70] The Yukon, which is heavily reliant on rented diesel generators, nearly required rolling blackouts when it hit 91% of power capacity in late 2025.[71] More than 280 (mostly Indigenous) communities in Canada are not connected to the main electricity grid and instead use imported diesel.[72, 73] This drives up costs and makes communities uniquely dependent on the successful importing of fuel, which in turn requires adequate transportation infrastructure. Many homes in these communities are also poorly insulated and deteriorating, which systematically increases energy demand and energy poverty.[74]

Workforce and skills shortages

Energy security depends on human capital in the form of expertise and operational capacity. Yet Canada faces critical labour shortages, particularly in the energy sector. As of 2021, one in five workers in Canada's energy sector were 55 or older,[75] and nearly half of core electricity sector occupations will face shortages by 2028.[76] The nuclear industry has also pointed to workforce needs as a key enabler of future nuclear generation.[77]

A range of shortages in other energy security-adjacent roles will complicate matters further. They include military personnel capable of guarding against foreign interference,[78] transport workers and truckers required to move energy resources across the country,[79] construction workers needed to build new energy infrastructure,[80] and cybersecurity workers needed to secure digitally connected infrastructure.[81] Particularly as energy technologies evolve, new skills will be required, making the ability to rapidly train or upskill workers a crucial way to maintain energy security.[82]

Gaps in Canada's approach to energy security

Canada faces structural barriers to a stronger Canadian energy security approach capable of protecting against the new and emerging pressures highlighted in the previous section. These include barriers related to:

Distributed governance across departments

Distributed governance across jurisdictions

Market and infrastructure fragmentation

Short-term needs vs long-term planning

Distributed governance across departments

The federal government does not have a dedicated single authority responsible for energy security—unlike, for example, the UK's Department for Energy Security and Net Zero. Instead, **energy security in Canada is a shared responsibility across a range of policy departments and regulators**. They include those focused on energy and the environment, such as Natural Resources Canada (NRCan), Environment and Climate Change Canada (ECCC) and the Canada Energy Regulator (CER), as well as those focused on security, such as the Canadian Security Intelligence Service (CSIS), the Communications Security Establishment (CSE) and Public Safety Canada.

NRCan houses the Energy Security and Resilience Division (ESRD), which "advances policies, programs, and initiatives to strengthen the security and resilience of critical energy infrastructure, domestically and internationally."[83] Although the ESRD is the government division most directly focused on energy security, federal policy teams within and across departments engage with a range of mandates, including national security, environmental resilience, energy supply, export markets and domestic project development. Canada's distributed governance approach to energy security enables different departments and a diverse range of experts to manage what is a vast and complex system.

This distributed governance approach can also lead to a range of challenges. Tension can arise between departmental objectives: for example, economic departments like Innovation, Science and Economic Development (ISED) fund the development of new energy technologies or innovations to help grow Canadian energy sectors, yet Public Services and Procurement Canada processes can, in some situations, be limiting for those same technologies—which may (in early stages) be more expensive than established technology.[84]

Tensions like these can at times make departmental efforts contradictory or even competitive, even when federal departments work together to accomplish shared goals. Even when objectives are aligned, distributed governance can still cause inefficiencies or difficulty coordinating. For example, an Auditor General's review of NRCan's Critical Minerals Strategy found that NRCan "did not have strong enough governance,"[85] which may limit its ability to succeed and achieve departmental objectives. Without a single department or minister responsible for energy security, a continued lack of direct accountability for progress on the file is likely.

These challenges can lead to slow development and barriers to investment. The Canada Electricity Advisory Council notes that because regulation, assessment and permitting processes in Canada are spread across jurisdictions and departments, "existing processes often have overlaps and lack clarity, contributing to approval delays and creating barriers to investment."[86] The Council also called for the federal government to "eliminate areas of redundancy between its departments"[87] in order to "shorten approval timelines for federal review."[88] In response, the federal government launched the Major Projects Office in 2025 with an explicit mandate to streamline and expedite "nation-building" infrastructure projects, including several that aim to strengthen Canada's energy systems.[89]

Distributed governance across jurisdictions

In Canada, energy security policy and regulation is not the sole responsibility of any one jurisdiction or level of government. Instead, it is divided and sometimes shared across governments. The federal government can regulate the cross-border nature of interprovincial infrastructure, but its use is not separable from provincial/territorial policy and regulation of energy systems. Provinces and territories remain attuned to energy security issues—for example, recent provincial energy strategies from the Government of Saskatchewan[90] and the Government of Ontario[91] both focused heavily on energy security. As a result of this jurisdictional complexity, energy security governance is interdependent, yet fragmented.

Canada's constitutional structure and division of powers can also lead to complexity in how energy security is managed and regulated. In addition to the 13 provincial and territorial energy departments, there are numerous system operators, crown utilities and nearly 20 energy regulators across the country. These include utility regulators, oil and gas regulators, and even joint federal-provincial offshore energy regulators. This decentralized approach to energy governance is an intentional, core feature of Canada's federal system, ensuring energy regulation is responsive to regional and local needs.

At the same time, the Canada Electricity Advisory Council's final report noted that "the array of overlapping policies at three levels of government is hindered at present by insufficient clarity, consistency and alignment."[92] This phenomenon is not restricted to electricity, with the Organisation for Economic Co-operation and Development (OECD) writing of Canada's economy as a whole that "interprovincial regulatory differences can reinforce the challenges [that Canada faces] related to the market fragmentation."[93]

Competing jurisdictional powers can lead to disputes and create uncertainty. For example, the BC government appealed to the Supreme Court to stop the Trans Mountain Pipeline expansion, while Saskatchewan, Ontario, and Alberta all made Supreme Court challenges against the federal carbon tax established by the 2018 *Greenhouse Gas Pollution Pricing Act*.[94] Interprovincial disputes can also affect the development of nationally significant energy projects; for example, disagreements over pipeline development have raised questions about federal and provincial authority and created legal and policy uncertainty.[95] This uncertainty, in combination with jurisdictional complexity, can also deter investment. The need to navigate multiple regulatory environments when transmission infrastructure crosses jurisdictional boundaries can reduce the incentive for private companies to build.[96] This has been part of the impetus behind the *Building Canada Act*'s goal of expediting major projects deemed to be in the national interest, yet the legislative changes and creation of the Major Projects Office only address a subset of these challenges, for a fraction of projects.

Energy security, and in particular efforts to expand or develop energy infrastructure, engages with Indigenous rights, jurisdiction and interests in multiple ways. There are a broad range of Indigenous perspectives, needs and interests around both conventional and renewable resources. Many First Nations Peoples have argued that various energy projects conflict with Indigenous sovereignty and treaty rights, from the Coastal GasLink Pipeline in Wet'suwet'en Territory[97] to the Site C Hydroelectric Dam in Treaty 8 First Nations Territory.[98] At the same time, Indigenous ownership and collaboration on energy projects is becoming more of a norm, and there is an increasing set of Indigenous project proponents in energy development and transmission,[99] including Cedar LNG and Enbridge's Westcoast natural gas pipeline.[100]

For Canada, developing modern energy projects while enabling Indigenous sovereignty requires multi-proponent, interjurisdictional initiatives, representing an important step toward economic reconciliation. However, projects like these also face coordination challenges and complex multi-partner collaboration that can create delays or barriers, with potential consequences for energy availability.

Market and infrastructure fragmentation

Provincial and territorial differences in energy systems and policy—or market fragmentation—can be barriers to energy security.

Market fragmentation means reduced incentive for co-operation and less efficient infrastructure development. The Atlantic Loop, a proposal by the federal government and Atlantic provinces to construct transmission lines in Atlantic Canada and Quebec, was eventually abandoned, in part because the provinces involved felt that it was easier to invest in provincial initiatives than a collaborative regional initiative. As the Government of Nova Scotia put it, "investing in our own energy resources avoids Nova Scotians having to spend billions on infrastructure in Quebec and New Brunswick."[101] Similarly, a second electricity grid intertie between Alberta and BC would increase reliability and both provinces' ability to benefit from each other's electricity, but neither province has incentive to develop it alone.[102] Private investors may also be less willing to fund major energy projects when markets are fragmented, because profits may be restricted to a smaller area (e.g., a single province), or because infrastructure or technologies must be designed to meet the regulations of multiple jurisdictions.

Fragmentation means that provinces prioritize self-sufficiency over national interconnection. As a result, "electricity trade most frequently occurs in a north-south direction, between Canadian provinces and US states, rather than in an east-west direction between Canadian provinces."[103] In fact, provinces trade more electricity with the United States than they do with one another.[104] This increases reliance on the United States and makes provincial and territorial systems less reliable and resilient.

Another sort of fragmentation can occur within provinces and territories, with energy markets featuring various actors with distinct roles. While this can enable clearer, more distinct mandates, it can also come at the cost of energy security approaches being less integrated. For example, in Ontario, distributed energy resources (DERs) are connected to grids operated by local distribution companies (LDCs), but are not part of the provincial grid operated by Ontario's Independent Electricity System Operator (IESO). As a result, the IESO cannot guide DER use as part of their system management—it can only drive awareness of their benefits.[105] Meanwhile, LDCs are advised to facilitate DER connections, yet "often without full clarity on rules or cost recovery."[106]

Provinces trade more electricity with the United States than they do with one another.[104] This increases reliance on the United States and makes provincial and territorial systems less reliable and resilient.

Short-term needs versus long-term planning

Even the most ambitious pathways to net-zero emissions acknowledge oil and gas playing an important role in electricity generation, heating, industrial processes and transportation for the foreseeable future.[107] There are inevitably energy security trade-offs between different types of energy, and any energy investment comes with opportunity costs. Network effects associated with energy technologies mean that one energy project can heavily influence other projects. While energy development is not a zero-sum game, **a focus on the immediate expansion of availability** can risk locking-in investment and potentially even diverting capital **from long-term infrastructure and economic decision-making**, influencing resilience and reliability needs in the future.

There is also an inherent tension between election cycles and long-term energy planning. Shifting jurisdictional priorities and election cycles can introduce uncertainty and limit any one jurisdiction's ability to develop a stable, long-term energy security plan or vision, or any one company's energy project. As the Atlantic Energy Collective describes, "energy infrastructure decisions unfold over decades, while most coordination approaches have not been designed to withstand political change."[108]

Today, changes in government often create operating uncertainty for energy project development. For example, 758 planned renewable energy projects in Ontario did not proceed when a new government came into power in 2018,[109] while the Enbridge Northern Gateway pipeline was cancelled shortly after a new government was elected federally in 2015.[110] This tension is particularly challenging when new threats to energy security are emerging and climate change is accelerating. This trend can also slow down or complicate multi-jurisdictional energy development projects, which typically require many years of planning, consultation and construction.

Energy policy in Canada often rewards incremental improvements over a baseline. While this can promote steady change, it may hinder the transformative change that could enable energy security progress. For example, the Federal Output-based Pricing System[111] and Clean Fuels Regulations[112] provide incentives relative to baseline performance and, as a result, may not reward new infrastructure or technological innovation as much. As a result, Canada may miss out on some energy security improvements based on new infrastructure or technology, or significant projects designed to be efficient from day one that deliver large step loads.

Recommendations for a comprehensive approach to energy security

Canada needs to embrace a comprehensive, pan-Canadian and modern approach to energy security that focuses on availability, reliability and resilience. To enable this approach, the country will need better coordination and alignment. This section outlines policy directions that can address gaps in the four areas described in the previous section, and outlines a fifth area of recommendations on the role of standardization in this work. These are directional recommendations intended to serve as a starting point that can drive collaboration on improving energy security in Canada.

Strengthen coordination across departments

- Develop, publish and maintain a new federal energy security policy with clear delineation of roles and responsibilities, timelines and target outcomes to enable a more secure energy system.
- Develop and use a national definition of energy security that encompasses availability, reliability, and resilience, and is shared across departments, areas and energy sectors.
- Develop an interdepartmental and intergovernmental committee focused on enabling energy security collaboration within and across governments (also applies to distributed governance across jurisdictions).

Strengthen coordination across jurisdictions

- Integrate provincial electricity grid plans into a national grid plan—as part of the forthcoming National Electricity Strategy—in partnership with provincial and federal governments, and Indigenous partners.[113]
- Strengthen alignment between provinces, territories and the federal government on regulatory frameworks for emerging technologies (e.g., energy storage technologies).
- Develop region- or resource-specific committees or forums with clear mandates, roles and responsibilities, and time-bound targets to address security gaps and needs across provinces and territories. These could follow models like the one proposed by the Atlantic Canada Energy Collective,[114] and could consult with non-government parties.
- Champion Canada's role on the international stage in pushing for greater focus on energy security (e.g., related to coordinated emergency responses, joint investments in research and development and interoperability), particularly among Canada's G7 allies.

Enhance market integration and infrastructure connectivity

- Strengthen interprovincial grid interties to improve regional grid connectivity, building on the progress of the National Energy Corridor Agreement.[115] Additionally, funding accountabilities should be made clear.
- Develop and implement standards to enable interjurisdictional interoperability (e.g., standards to facilitate more connected grids).
- Develop and implement common standards to determine reliability measures for energy systems.

Enable long-term and strategic energy planning

- Develop and implement multi-jurisdictional energy strategies, including the use of standards, to facilitate energy security across emerging needs, such as ensuring EV charging networks are sufficiently dense and appropriately located to meet projected EV needs. These strategies should also support technological innovation, including microreactors and energy storage, and other enablers such as AI.
- Commit long-term funding to support investment in the deployment and adoption of new energy technologies, for example, to enable critical mineral processing and SMR deployment.

Maximize the use of standards to drive interoperability and reduce fragmentation

- Provide strategic and financial support to enable proactive pre-standardization engagement and development. Support the implementation of standards for emerging technologies—such as DERs, microreactors, energy storage and microgrids—that contribute to energy availability, reliability and resilience.
- Develop and implement standards to support a national definition of energy security and associated terminologies and methodologies across energy systems.
- Support development and implementation of training and credentialling programs for effective application of standards in practice. This will provide the workforce with the skills and tools needed to deliver real improvements in energy availability, reliability and resilience.

Conclusion

As the energy security landscape changes, Canada needs energy to be available, reliable and resilient, in order to protect Canadians' prosperity, public safety and security. This requires a more comprehensive, federal-led approach—and the time for such an approach is now.

In the fall of 2025, the G7 issued a call to strengthen international cooperation to help ensure collective energy security.[116] These international priorities must be reflected at home. Further, the federal government's new Major Projects Office highlights how key energy projects are of crucial importance for Canada. Energy security must be considered a core part of Canada's nation-building. A National Electricity Strategy is also in the works, with the government highlighting the importance of affordable and reliable energy systems "in a more dangerous and volatile world."[117]

Finally, the federal government has recently increased its emphasis on national security and defence. Particularly during uncertain times, energy security is a foundational aspect of protecting and building Canada.

In combination, these developments demonstrate the urgency of renewed attention to energy security. Global events, political momentum and policy need are converging towards a world where energy security must play a central role in Canada's future.

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