Nuclear power in Canada: gamble or game changer

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Foreword

The energy transition is reshaping narratives in the energy sector, and nuclear power is no exception. Canada has a long history of nuclear research, development, and operation, but this journey has not been without its twists and turns.

In the 1970s, Canada began its nuclear power expansion by connecting several reactors to the electricity grid in Ontario. This energy source enabled millions of Canadians to access reliable electricity, enhancing energy security and affordability while creating numerous economic opportunities.

However, by the early 2000s, public support for nuclear power began to wane, particularly following the closure of reactors in Québec. Concerns about environmental impacts, the promotion of alternative energy sources and fears stemming from the Fukushima disaster contributed to this shift in sentiment.

Canada has since struggled to maintain momentum in nuclear deployment despite being one of the pioneers in nuclear technology. More discussions around nuclear decommissioning surfaced and renewable sources like wind and solar began to outcompete nuclear for investment.

In 2025, new national challenges have emerged, including trade uncertainties, electrification aspirations, the rise of AI and data centre prominence, and the heightened awareness of energy security following the Russian invasion of Ukraine. Canada is once again engaging in conversations about the necessity for expanding nuclear power generation as part of the energy transition. While the answer may not be straightforward, this publication aims to clarify Canada's advantageous position for deploying new nuclear assets.

At EY, we believe Canada needs a diverse energy mix to support its net-zero ambitions, acknowledging that each province will have its own configuration based on geographical characteristics and historical precedents. In this context, nuclear power can play an important role.

Previously, Canada has missed significant energy opportunities, such as supplying liquid natural gas (LNG) to Europe and expanding the national oil and gas pipeline capacity to Asia. Nuclear power represents a unique value proposition to provide essential electricity baseload for electrification purposes, safeguard national energy security interests and further the net-zero ambitions.

Perhaps it's time to revisit the nuclear discussion in our country in a more meaningful way.

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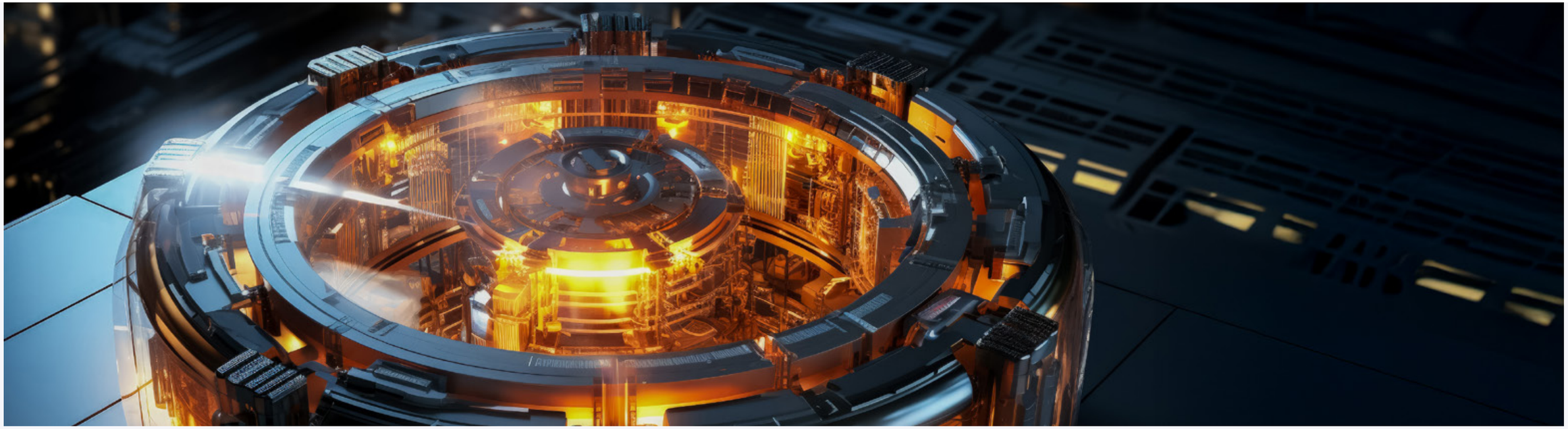


Setting the context for nuclear energy

As the world strives to reduce greenhouse gas (GHG) emissions and achieve net-zero targets, fossil fuels are increasingly deprioritized in new infrastructure development. The global community recognizes that decarbonization through electrification is a key strategy in the energy transition.[1] However, the energy trilemma remains a challenge, necessitating the development of sufficient power infrastructure to ensure a balance between equity, security and environmental needs.

Canada has historically benefited from relative energy supply stability, largely due to its abundant natural resources. The country boasts a diverse array of electricity generation assets across provinces, totalling 639 TWh.[2] For instance, British Columbia, Manitoba and Québec are rich in hydroelectric resources, while Alberta and Saskatchewan focus on natural gas, and Ontario and New Brunswick deploy nuclear power.[3] Additionally, total electricity emissions decreased by 63% from 2000 to 2022, driven by increased generation from renewable sources.[4]

However, looking ahead, the electricity sector in Canada may need to undergo a fundamental transformation in its asset structure. Estimates suggest that the country will require upwards of $40 billion in annual investments to achieve net zero, with a significant portion of this cost attributed to enhancing infrastructure for electrification purposes.[5] While transmission and distribution systems will require substantial upgrades, Canada will also need to increase its electricity generation capacity by 2.2 to 3.4 times.[6]

Provinces are exploring various options to bridge this gap, including new hydro, geothermal, solar and wind energy installations. However, nuclear power should be also considered as a viable solution in the mix. Currently, Canada generates 12.9%, or 82 TWh, of its electricity from nuclear energy.[7]

The country possesses a robust supply chain and abundant nuclear feedstock resources. It is imperative for Canada to evaluate diverse energy solutions during this transition.

In the following materials, EYs Industrials and Energy team will explore the key reasons for Canada to expand its nuclear power capacity and outline a pathway to reduce risks associated with investment and asset operation.

Before diving into that, let's consider whether the scale of incoming electrification is as significant as stakeholders perceive it to be.

In this context, a critical question arises:

Is the deployment of nuclear power a viable opportunity for Canada to meet the impending growth in electricity demand?

Rising electricity demand and the grid's growing hunger

At least for now, with Canada striving to achieve net-zero emissions by 2050, electricity demand is projected to more than double during this period, surpassing 1,200 TWh.[8] This significant increase will be driven by the electrification of major Canadian industries and large-scale, electricity-intensive initiatives. Even without further advances towards net-zero emissions, the Canada Energy Regulator (CER) projects a 62% increase in electricity demand by 2050.[9]

Future developments within four primary sectors will fuel energy demand growth in Canada:

TRANSPORTATION

In 2023, electricity accounted for approximately 0.1% of fuel consumption in passenger transportation, with motor gasoline, diesel and aviation fuels being the primary sources in this sector.[10] However, the ongoing emphasis on zero-emission vehicles (ZEVs) is expected to drive significant changes in passenger transportation. Canada has underscored the importance of decarbonizing this sector through the implementation of sales mandates for ZEVs, the expansion of incentives for ZEV purchases and additional investments in federal programs supporting this transition.[11]

The Canadian ZEV landscape has evolved accordingly, with ZEV registrations increasing from 1% in 2017 to 10.3% in 2023.[12] This figure is projected to continue rising, with approximately 10 million ZEVs expected on the road by 2035.[13]

In this scenario, additional electricity consumption from **ZEVs would range from 30 million to 60 million MWh, representing 5%-10% of Canada's total electricity generation in 2022.**[14]

INDUSTRIAL*

The industrial sector is projected to undergo significant electrification over the next two decades. **Currently, electricity accounts for 25% of Canada's total energy needs in this sector.**[15]

To achieve net-zero goals by 2050, **forecasts indicate that this share must increase to 41%** while simultaneously reducing the sector's overall energy consumption.[16]

Important to note, the level of electrification varies across different industrial sectors. For instance, aluminum production relies on electricity for 80% of its operations, whereas mining and construction use electricity for less than 10%.[17]

Several hurdles continue to challenge the industrial sector, including a lack of technical readiness for electrification, uncertainty regarding the reliability of electricity supply and the availability of cheap, abundant natural gas.[18]

However, the push for a cleaner energy future in Canada may help overcome these barriers. Industrial electrification will be closely tied to electricity demand in Canada and should be continuously monitored.

RESIDENTIAL

While overall energy demand in the residential sector is expected to decrease by 2050 due to improved building efficiency measures and transitions to more efficient heating sources, electricity demand is projected to grow at an annual rate of 1.2% during this period.[19]

This surge in residential power demand is driven primarily by a steady increase in electric heating, with **heat pumps anticipated to provide 50% of space heating needs by 2050, up from just 6% in 2021.**[20] In scenarios with limited future climate change action, this growth may be slower but remains substantial.[21]

Since space heating accounted for approximately 65% of Canadian residential energy use in 2020, the primary focus for electrification will continue to be in this area.[22] The federal government has also provided significant financial support to encourage clean energy retrofitting, including the Canada Greener Homes Grant and Loan, with similar programs expected to continue.[23]

As momentum builds in residential electrification, this sector has the potential to significantly impact electricity demand across Canada.[24]

DATA CENTRES

Another substantial driver of Canada's electricity demand is the increasing emphasis on major, energy-intensive data centres. Canada is considered an attractive location for these facilities due to low electricity prices, abundant clean electricity resources and a cool climate.[25] A proposed $70 billion data centre in Greenview, Alberta, has further enhanced Canada's visibility in this sector.[26]

Data centre electricity consumption is projected to almost double by the end of 2026.[27]

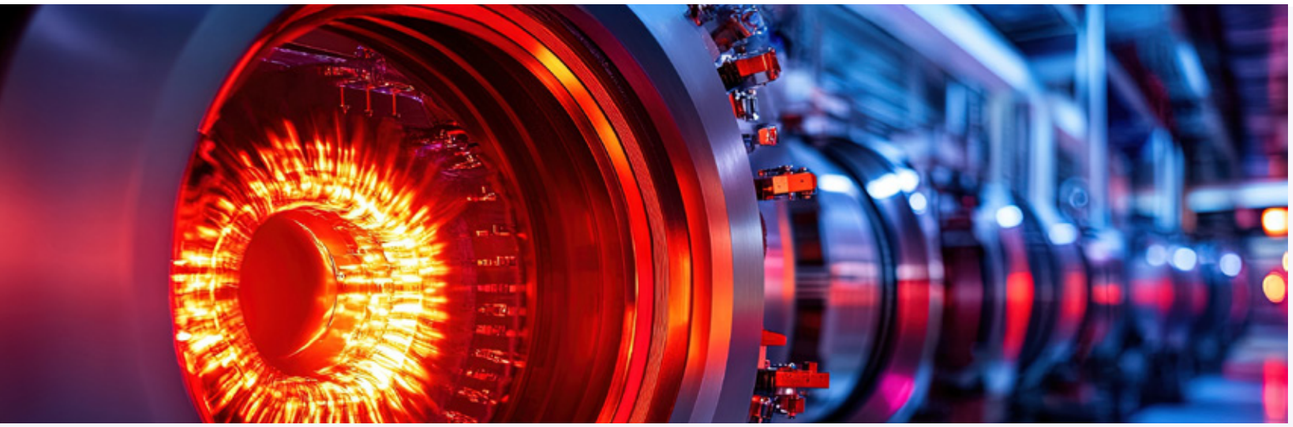
Canadian utilities are beginning to emphasize this risk in electricity projections, with Hydro Québec anticipating a massive 4.1 TWh increase in power demand from data centres by 2032.[28]

While this shows significant opportunity in Canada, a surge in data centres can lead to grid reliability issues and price increases for consumers. To effectively manage this increase in electricity demand, a clearly defined power generation strategy is essential across Canada.

KEY TAKEAWAY

At this time, concerns about Canada's rapid increase in electricity demand appear to be well founded, given the significant electrification trends across various sectors. It's important to recognize that provinces and territories will experience varying rates of electrification, as previously highlighted by "EY's Energy Transition in Canada – Pathway to the 2050 Energy System" report. Nevertheless, **Canada is expected to experience a substantial overall spike in electricity demand, for which traditional systems may be unprepared.**

* Note: The industrial sector refers to industries involved in the production of goods and services through the processing of raw materials, such as manufacturing, construction, mining and utilities.



The challenge of fuelling the baseload foundation

While Canada anticipates an unprecedented increase in electricity demand, industry stakeholders are actively exploring options to address this impending challenge. Currently, Canada has a diverse electricity generation mix that varies across provinces. Each source of electricity offers unique benefits and capabilities to meet the growing demand. However, these sources also face unique risks that may compromise their ability to support the energy transition on their own:

HYDRO

OVERVIEW

Hydro is the largest electricity source in Canada, **accounting for 61.6% of the total national generation mix**.[29]

Regions such as Manitoba, Québec, British Columbia, Newfoundland and Labrador and the Yukon are heavily reliant on hydropower, with at least 86% of their electricity coming from this source.[30]

Additionally, these hydro-dependent provinces have the potential to more than double their current hydropower capacity to help address the projected spike in electricity demand.[31]

However, despite being considered a reliable power source, **drought conditions led to a 6% reduction in Canadian hydropower output in 2024**.[32] Furthermore, significant capital requirements are needed to build new generation sites and refurbish existing infrastructure, creating uncertainty regarding the continued reliance on hydropower generation.

☑ KEY DEPLOYMENT BENEFITS

- Sustainable and renewable energy
- Minimal GHG impact during operation
- Consistent and stable electricity supply
- Pumped storage provides additional capacity options

! KEY DEPLOYMENT RISKS

- Disruption of ecosystems
- Sensitivity to climate change and adverse weather conditions
- Significant upfront capital
- Community displacement
- Geographic limitations

NUCLEAR

OVERVIEW

Nuclear is the second-largest electricity source in Canada, **accounting for 12.9% of the total national generation mix**.[33] It is often regarded as the most reliable source of electricity generation, **typically operating at maximum capacity 92.5% of the time**.[34] Additionally, nuclear power has minimal GHG emissions, a small land footprint and minimal waste.[35]

Construction costs can be high and timelines lengthy. Furthermore, public concerns regarding nuclear safety and waste management practices persist. We'll explore the benefits and risks associated with nuclear energy in greater detail in the upcoming sections.

☑ KEY DEPLOYMENT BENEFITS

- Consistent and stable electricity supply
- Baseload flexibility and reliability
- Minimal GHG impact during operation
- Energy security and equity
- Long operating lifetime

! KEY DEPLOYMENT RISKS

- High capital cost and overruns
- Extended construction timelines
- Safety
- Waste management
- Mixed public opinion

NATURAL GAS

OVERVIEW

Natural gas is the third-largest electricity source in Canada following hydro and nuclear, **accounting for 12.6% of the total national generation mix**.[36]

Alberta and Saskatchewan are the most reliant provinces on this resource, with shares of 67.4% and 46.4%, respectively.[37] Natural gas is also used extensively in other regions, such as Nova Scotia (18.5%) and the Northwest Territories (14.6%).[38]

Natural gas has gained popularity as coal plants have been phased out. **It produces half of coal-burning CO_2 emissions, making it a more environmentally friendly option**.[39]

However, despite its advantages, there are still decarbonization challenges left to address. Natural gas-powered electricity generation will require carbon capture and storage, along with other related technologies. These advancements will necessitate significant investment.

☑ KEY DEPLOYMENT BENEFITS

- Consistent and stable electricity supply
- Baseload flexibility and reliability
- Abundant supply in Canada, especially in the West and the Maritimes
- Frequently viewed as a transition fuel
- Significant economic opportunities

! KEY DEPLOYMENT RISKS

- Notable GHG impact during operation
- Significant upfront capital
- Cross-country transportation requirements
- Medium-term payback periods

WIND

OVERVIEW

Wind is a fast-growing electricity generation source in Canada, accounting for 5.7% of the total national generation mix.[40]

Between 2019 and 2024, Canada's onshore and offshore wind energy capacity grew by 35%, primarily in Alberta and Saskatchewan.[41]

Investors and utilities are particularly attracted to wind energy due to its relatively low capital and operating costs, which continue to decline.[42] For example, capital cost for wind electricity is expected to decrease by 10% by 2030.[43]

However, wind generation also has its challenges. Some stakeholders express concerns about the reliability of this energy source, particularly its vulnerability to extreme weather events.[44] Additionally, wind turbines can have adverse impacts on local wildlife or face public opposition regarding land use.[45, 46]

A recent change in Alberta legislation introduced specified buffer zones to address these concerns.[47]

KEY DEPLOYMENT BENEFITS

- Sustainable and renewable energy
- Low upfront capital expenditure
- Low operating and maintenance cost

KEY DEPLOYMENT RISKS

- Variable energy production dependent on weather conditions
- Impact on wildlife
- Land use concerns
- Asset recycling limitations

SOLAR

OVERVIEW

Solar energy is another rapidly growing source of electricity generation in Canada, although **it currently accounts for less than 1% of the total national generation mix**.[48]
Between 2019 and 2024, Canada's solar energy capacity **increased by 92%**.[49]
Notably, solar installations have valuable applications in remote and Indigenous communities in Northern Canada, where relatively low capital costs and extended daylight hours make this energy source particularly attractive.[50]
However, like wind energy, solar power is vulnerable to weather patterns that can compromise grid resilience.[51] Hail or storms may damage solar panels or obstruct sunlight.[52] While grid-scale storage solutions could help mitigate these challenges, they require additional innovation and investment.

KEY DEPLOYMENT BENEFITS

- Sustainable and renewable energy
- Low upfront capital expenditure
- Energy equity and accessibility

KEY DEPLOYMENT RISKS

- Variable energy production dependent on weather conditions
- High infrastructure requirements for substantial energy generation (i.e., significant number of solar panels)
- Battery storage requirements
- Asset recycling limitations

Note: Canada's electricity generation mix also includes coal, biomass, petroleum and other miscellaneous sources. These items haven't been highlighted due to their perceived limited prominence as part of the energy transition.

KEY TAKEAWAY

Canada's economic growth and decarbonization ambitions hinge on a critical prerequisite: a substantial increase in electricity supply to meet the rapidly growing power demand. Each of the mentioned generation sources has the potential to contribute to these needs.

However, when considered in isolation, they also present significant risks and barriers that may limit their effectiveness. For example, hydropower faces new challenges related to climate change, natural gas still emits a considerable amount of GHGs, and wind and solar energy are heavily reliant on climatic conditions, which can impact grid reliability and resilience.

Therefore, **a diverse energy mix that adapts to the evolving energy landscape will be essential for achieving energy transition goals**. While renewable power generation is vital, its inherent intermittency and variability necessitate the inclusion of secure baseload generation to support continuous economic activity. Expanding nuclear power capacity presents a significant opportunity for Canada to meet its national growth objectives and complement other electricity sources.

Canada's six nuclear energy advantages

By providing a reliable source of electricity, nuclear power can complement other energy sources, enhance system reliability and play a pivotal role in the country's energy transition. Embracing nuclear power would not only support economic productivity, but would also align with the national commitments to sustainable development and emissions reduction.

At this stage, Canada is well positioned to expand its current share of nuclear power generation. This favourable outlook is supported by a robust supply chain and several national advantages, including:

1 ABUNDANT FEEDSTOCK RESOURCES

Nuclear power generation relies on refined uranium feedstock, and Canada possesses 10% of the world's known recoverable reserves of this critical mineral.[53]

Additionally, Canada is the second-largest miner and exporter of uranium, with an annual production of 7.4 kilotons accounting for 14% of global exports. [54]

This represents a significant competitive advantage, enabling Canada to meet both its domestic energy needs and the demands of international markets. In 2022, 80% of the country's production was exported, primarily to the United Kingdom, Netherlands, Germany and the United States. [55, 56]

2 ESTABLISHED NUCLEAR FUEL MANUFACTURING

Uranium is a dense metal that is economically extracted from ore deposits. The element must be milled, refined, enriched and converted into nuclear fuel prior to becoming available for power generation purposes.[57]

Canada benefits from existing facilities capable of performing these processes, notably Cameco's Blind River refinery, which is the world's largest commercial uranium refinery.[58] The facility produces high-purity uranium trioxide (U03) that is subsequently converted to uranium dioxide (U02), which fuels nuclear reactors.[59]

Such infrastructure is a key advantage, as developing new facilities involves substantial capital investments and navigating complex regulatory approvals, including compliance with the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) and International Atomic Energy Agency (IAEA) safeguards.[60]

3 LEADING NUCLEAR TECHNOLOGY

Canada is among the pioneers in the nuclear energy field. The country developed its own Canada Deuterium Uranium (CANDU) reactor technology, bringing the Pickering A nuclear station online in Ontario in 1971.[61, 62]

Today, Canada has 19 reactors in full commercial operation across Ontario and New Brunswick.[63] Additionally, there are 37 nuclear research and development institutions that continue to support further advancement of in-house capabilities, such as small modular reactors (SMRs), which have been identified as a crucial nonemitting energy source by Natural Resources Canada (NRCan).[64, 65]

Together, these factors position Canada as a leader in nuclear power technology, backed by a rich historical context and extensive operational experience.

4 HIGHLY SKILLED WORKFORCE

Many industries in Canada are grappling with a skilled labour shortage. By early 2025, approximately one in three employers anticipated labour-related obstacles, such as difficulties in finding or retaining skilled workers.[66]

However, the nuclear power sector does not face similar challenges, at least in the foreseeable future. Currently, the sector employs 89,000 people with invaluable expertise in engineering, science, research and business.[67] Notably, 89% of nuclear jobs are classified as high-skill positions, underscoring the industry's significant contribution to Canada's knowledge-based economy.[68]

Given the field's technical nature, a highly skilled workforce is essential for fostering and sustaining a prosperous nuclear power sector. Canada's strong labour foundation positions the industry favourably for future growth and development.

5 STRONG REGULATORY FRAMEWORK

As a pioneer in nuclear energy research and development, Canada began regulating the sector early, notably with the proclamation of the Atomic Energy Control Act in 1946.[69] Since then, a comprehensive set of regulations has been established to ensure the safe and responsible procurement and use of nuclear energy across the country. Key components of this framework include the Nuclear Safety and Control Act, the Canadian Nuclear Safety Commission and several others.[70]

In line with the IAEA guidelines, Canada actively participates in nuclear safety assessments, such as the Convention on Nuclear Safety, and frequently receives commendations from international peers.[71] This robust regulatory framework offers significant advantages, including enhanced safety, increased public confidence and a solid foundation for the continued growth and development of Canada's nuclear industry.

6 PUBLIC POLICY SUPPORT

Unlike other nations where public policy support for nuclear energy may be uncertain, Canada has largely enjoyed strong backing from stakeholders, including the federal and provincial governments. Recently, these governments have reinforced their commitment by creating a predictable environment for investors and developers.

In 2022, Natural Resources Canada released an SMR Action Plan Progress Update, emphasizing continued industry collaboration.[72] In 2023, Canada committed to tripling its nuclear energy capacity as part of its strategy to reduce GHG emissions.[73]

Furthermore, the 2024 federal fall economic statement introduced financial incentives, such as a 15% clean electricity investment tax credit and a 30% clean technology investment tax credit, along with regulatory streamlining through amendments to the Physical Activities Regulations in the Impact Assessment Act.[74]

This ongoing public policy support fosters confidence in nuclear projects and assures stakeholders of future long-term investments.

ANNOUNCEMENTS:

On March 5, 2025, NRCan announced a maximum of $304 million investment towards development and modernization of a new, large-scale natural uranium-fuelled CANDU nuclear reactor.[7]

On May 8, 2025, the Government of Ontario announced the approval of North America's first grid-scale SMR construction at the Darlington nuclear site.[19] This groundbreaking initiative will feature four BWRX-300 SMRs, collectively producing a total of 1,200 MW.[19] The first unit is expected to become operational by 2030.[75]

KEY TAKEAWAY

Canada's unique combination of national strengths positions the country as a prime beneficiary of nuclear power and an ideal candidate for its further development. **These advantages will be critical success factors in facilitating widespread industry growth and ensuring the sustainable advancement of nuclear power in Canada.**

Critical nuclear deployment obstacles

The current opportunity can be labelled as a "nuclear renaissance," reflecting the changing fortunes of the wider nuclear industry.[76] Canada is well positioned to further develop and expand nuclear power generation.

However, there are several critical challenges that must be addressed to facilitate the deployment process. Some of these obstacles hindered project implementation in the early 2000s and remain top of mind for industry stakeholders today.

Each revival of nuclear energy brings promises that attract political, social and investor confidence, offering a more scalable, reliable, cost-effective and environmentally safer energy solution. Unfortunately, assurances of superiority have often fallen short based on recent history, and these challenges are not unique to Canada.

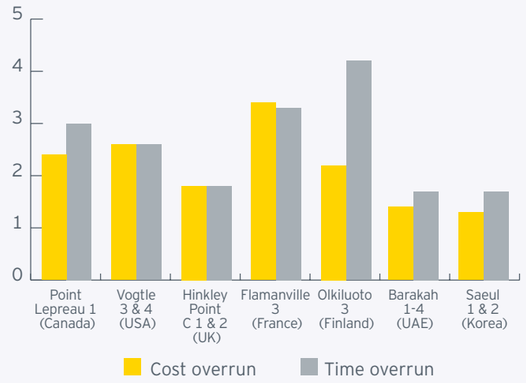
The challenges mirror common issues faced by other industrially developed nations, including:

- **High capital cost and overruns:** Nuclear assets require significant upfront investments and prolonged capital recovery periods. The issue is further exacerbated by potential cost overruns and timeline delays that are common in large infrastructure projects.

  For example, the Darlington Nuclear Generating Station, consisting of four CANDU units was brought into service at a final cost of $14.5 billion, which represented almost twice the estimated final cost (capital and construction) of $7.4 billion (in 1993 dollars).[78]

  New CANDU reactors may exceed $10 billion in costs, which is less favourable at a time when energy companies are seeking to deploy less capital-intensive and long-term assets. Compared to other power generation options, such as natural gas plants, nuclear power reactors still entail significantly higher construction investment, financing and scheduling risks.[79]

Capital cost and construction overruns for select recent nuclear projects (x times)[77]



- **Extended construction timelines:** Time is of the essence in the energy transition, and it is often viewed as a challenge for nuclear power deployment. Historically, the construction and commissioning of nuclear power plants have taken up to 12 years.[80]

  In contrast, other power generation assets, such as solar farms, typically require less than two years to plan, develop and connect, recognizing that various factors could impact the process and timelines.[81]

  Additionally, the regulatory environment in Canada presents further challenges, as the process for project approvals can be complex, uncertain and time consuming, often involving multiple levels of government and various regulatory bodies. Project delays can cascade and snowball into additional timeline risks.[82] As a result, investors and policymakers demand greater rigour in project planning, management and execution.

DEFINITION:

Generation I, II and III reactors are older types of reactors developed from the 1950s to the 1990s, with Generation II being the most common operational types today. Advanced reactors, commonly referred to as Gen III+ or IV, represent next-generation technologies that enhance safety and sustainability.[83]

- **Nuclear safety:** Safety is a paramount concern in the deployment of nuclear power. The Canadian nuclear industry is subject to stringent regulatory requirements and oversight to ensure safe reactor operations. Nevertheless, stakeholders continue to demand greater assurance regarding safety and risk management.

  Current Generation I, II and III reactors rely on conventional light-water technology, which necessitates external power sources or human intervention in the event of malfunctions.[84] This reliance raises concerns about the potential for human error and the adequacy of backup systems during emergencies. As a result, there is an increasing emphasis on developing advanced reactor designs that incorporate inherent safety features and reduce the need for external inputs.[85]

  Addressing these safety concerns and enhancing risk management practices are essential for fostering confidence in nuclear power deployment.

FACT CHECK:

Some people assume that the deployment of nuclear power plants may be hindered by the upfront GHG emissions primarily associated with resource procurement and construction, such as those from cement production. However, studies indicate that nuclear reactors, along with hydro and wind energy, produce the lowest GHG emissions per unit of electricity on a lifecycle basis (i.e., from design to decommissioning), with emissions of 28, 26 and 26 tonnes of CO2 equivalent per gigawatt-hour (GWh), respectively.[16, 17]

- **Waste management**: Effective nuclear waste management is another concern for the industry. Long-term storage and disposal of nuclear waste present challenges, as communities and stakeholders often express apprehension about the safety and environmental impacts of those facilities.[86]

  Additionally, uncertainties regarding storage site locations and the safety of transportation methods complicate the situation, as highlighted by a lack of proper consultation with Indigenous communities at the Chalk River site.[87, 88]

  While Canada has a Policy for Radioactive Waste Management and Decommissioning and a strong track record in safe waste management, challenges remain in reducing the radioactivity of waste materials.[89]

  The federal government has allocated $70 million for research to minimize waste generated from nuclear reactors and enhance sustainability, but additional policies in this area may likely be needed.[90]

- **Mixed public opinion:** Public support is crucial for large energy infrastructure projects. A recent study indicates that 63% of Canadians now support nuclear power generation, reflecting a 12% increase since 2021 and nearly double since the early 1990s.[91]

  However, support varies by province, with Québec showing the least favour at only 34%.[92] While some provinces may be more conducive to investing in new nuclear power capacity, any further decline in public opinion could impede future capital deployment and the ability to secure a social licence. This situation may lead governments to hesitate in committing public funds, highlighting the need for initiatives to address concerns among the remaining skeptics.

  A notable example of how mixed public opinion can negatively impact the nuclear sector is Germany, which phased out 36 reactors with a combined capacity of 26,411 Mwe, representing 16% of its total generation mix due to negative sentiment towards nuclear energy.[93] Canada must proactively address this challenge to ensure the future viability of its nuclear industry.

KEY TAKEAWAY

While Canada has the potential to expand its nuclear power capabilities and capacity, **addressing these obstacles is essential for the successful deployment of novel nuclear technologies.** For decades, industry stakeholders have sought a pathway to facilitate greater nuclear deployment across the country. Some provinces, such as Alberta and Saskatchewan, have already begun assessing nuclear opportunities in their respective jurisdictions. **Today, there may be a timely opportunity to make this vision a reality** on a more widespread basis.

Canada's pathway to a nuclear renaissance

Canada must address three key focus areas to successfully deploy more nuclear reactor assets, including SMR technology. Various market participants, from technology providers to regulators, should take specific steps to expedite this process. Importantly, these actions may also benefit innovative nuclear fusion technology, which is anticipated to play a significant role in the energy transition.

At EY, we advocate for an ecosystem development approach that not only promotes growth within the direct value chain but also encourages the engagement and participation of all stakeholders.

Our teams propose a sequenced pathway to address three primary focus areas:

*PRIORITY SEQUENCING

FOCUS AREA 1:
ADDRESS NUCLEAR ENERGY MISCONCEPTIONS

KEY ACTION ITEMS

- Foster public acceptance
- Further streamline the regulatory environment
- Build and strengthen community partnerships
- Align and calibrate national nuclear interests with interprovincial differences and needs

FOCUS AREA 2:
REINFORCE AND GROW NUCLEAR ENERGY EXPERTISE

KEY ACTION ITEMS

- Invest in nuclear R&D and pilot studies
- Provide investment enablement mechanisms
- Attract and grow nuclear workforce
- Expediate long-term waste management protocols
- Foster international collaboration

FOCUS AREA 3:
TACKLE NUCLEAR MARKET INEFFICIENCIES

KEY ACTION ITEMS

- Increase awareness of the projected electricity demand growth and the role of nuclear power in Canada
- Communicate nuclear energy benefits
- Reassure the public over nuclear safety standards

*Note: Priority sequencing of the focus areas is highly important. Each item builds on top of another and allows for a comprehensive enablement of the nuclear ecosystem in Canada.

FOCUS AREA 1:
ADDRESS NUCLEAR ENERGY MISCONCEPTIONS

First, Canada must address the misconceptions surrounding nuclear energy. The current mixed public opinion has hindered stakeholders from advancing the nuclear agenda; without the **necessary political capital and social licence**, progress in this field is likely to remain limited.

It is essential for Canadians to **gain a clearer understanding of the upcoming electrification challenges and the critical role nuclear-powered generation can play in the energy transition**. Furthermore, the public needs to be informed about the pros and cons of nuclear reactors.

Currently, fewer than 50% of Canadians perceive nuclear energy as a low-carbon electricity source.[94] In addition, 60% of Canadians are unfamiliar with SMR technology and its advancements over traditional nuclear reactors, while another 25% have heard of SMRs but lack detailed knowledge about them.[95]

To address these gaps, both **government and private industry stakeholders must invest in initiatives that reassure the public about the value of nuclear energy** as a baseload electricity generation source. This should be complemented by clear communication regarding the **high safety standards** associated with nuclear power. Canada is recognized for having some of the most advanced nuclear safety protocols in the world, as acknowledged by the IAEA and other international organizations. Emphasizing this point should be central to efforts aimed at dispelling misconceptions and fostering a more informed public dialogue.

FOCUS AREA 2:
REINFORCE AND GROW NUCLEAR ENERGY EXPERTISE

While Canada has a range of nuclear reactor technologies, further work is needed to enhance the commercial viability of new projects. Stakeholders must focus on developing economically feasible solutions through increased R&D, pilot studies, and international collaboration.*

A key factor in reinforcing and growing nuclear energy expertise lies in Canada's ability to **attract financing to this sector**. Existing public policy and regulatory support can be enhanced through additional incentives, such as tax credits, subsidies and public funding, to improve project economics. Furthermore, the government should promote shared investment models to encourage collaboration with the private sector, thereby reducing risk profiles and payback periods.

Important to note, successful research, construction and commissioning of projects will require qualified labour. Although Canada already has a highly skilled nuclear workforce, additional resources will be necessary. For example, more than 5,000 skilled workers will be needed to operate the future SMR fleet across provinces.[9] Therefore, Canada must focus on **growing and attracting talent**, potentially through simplified relocation initiatives and educational grants.

In parallel, **nuclear waste management practices require further study and improvement**. While novel reactor models are expected to improve nuclear safety through passive features that do not require human intervention, many designs may generate 2 to 30 times the volume of nuclear waste compared to traditional reactors.[96, 97]

The Canadian government is already prioritizing deep geological repositories (DGRs) as an advanced waste management solution, with the first expected to be operational between 2040 and 2045.[98] DGR will improve waste management practices and support the safe expansion of nuclear energy. However, more efforts are needed to fully address these challenges.

Finally, **international collaboration is essential for Canada** to gain momentum in the nuclear energy sector. Engaging with the international agencies will facilitate knowledge sharing, streamline design processes and improve time and cost efficiencies, enabling Canada to capitalize on the opportunities presented by nuclear power.[99] Collectively, these efforts will not only reinforce Canada's nuclear capabilities but also cultivate a robust framework for sustained growth and innovation.

*Note: Recent approval for SMR construction in Ontario marks an important milestone. However, further design and research are necessary to reduce overall costs and timelines, making SMR investments more attractive.

FOCUS AREA 3:
TACKLE NUCLEAR MARKET INEFFICIENCIES

Assuming the public is supportive of more nuclear deployment and new nuclear projects are commercially available, stakeholders will need to address the **existing market inefficiencies that contribute to cost and timeline overruns**. A significant factor in these inefficiencies is inflation related to construction materials, which may be beyond the immediate control of market participants. However, there are other areas that can be influenced to reduce capital requirements.

While Canada has a robust nuclear regulatory framework, navigating adjacent regulations can be complex. **Project approvals and construction permits may overlap or even duplicate efforts**, resulting in Canada ranking 34th out of 35 OECD countries in permitting approval processes.[100]

Increased deployment of SMRs is likely to improve this regulatory environment, as most component and reactor construction will occur offsite, allowing for more efficient approvals compared to traditional nuclear reactors. Nonetheless, refining and simplifying the regulatory environment is essential to fully capitalize on the opportunities nuclear power technology presents.

Furthermore, large infrastructure projects require **strong community partnerships** to ensure adequate consultation, promote citizen involvement and foster alignment, **ultimately leading to fewer disputes and timeline delays**. Indigenous partnerships are particularly crucial, as the support of Indigenous Peoples is vital throughout the nuclear supply chain, driving efficiency from uranium mining to component manufacturing and new project development.[101]

Last, Canada must **strategically allocate resources to regions where nuclear deployment is most needed and desired**. To meet its 2050 net-zero ambitions, Canada will need to build 85 reactors at an estimated cost of up to $226 billion.[102] However, given that energy is a provincial jurisdiction and some provinces may not seek to expand nuclear capacity, it is reasonable to anticipate that the actual number of deployed SMRs will be lower. Canada should continue engaging in a national nuclear strategy deployment conversation, such as the existing SMR Action Plan, while focusing on specific locations where nuclear advancements are most conducive.

KEY TAKEAWAY

Canada needs a significant degree of change and transformation to enable nuclear deployment across the country. While existing obstacles are considerable, they are not insurmountable. EY teams propose a carefully sequenced pathway to enhance Canada's nuclear ecosystem by actioning three major focus areas:

- **Addressing nuclear energy misconceptions**
- **Reinforcing and growing nuclear energy expertise**
- **Tackling nuclear market inefficiencies**

Although action steps in each area can be implemented independently, their true value will be realized through a comprehensive and integrated implementation strategy. The pathway we recommend can serve as a foundation for such an approach.

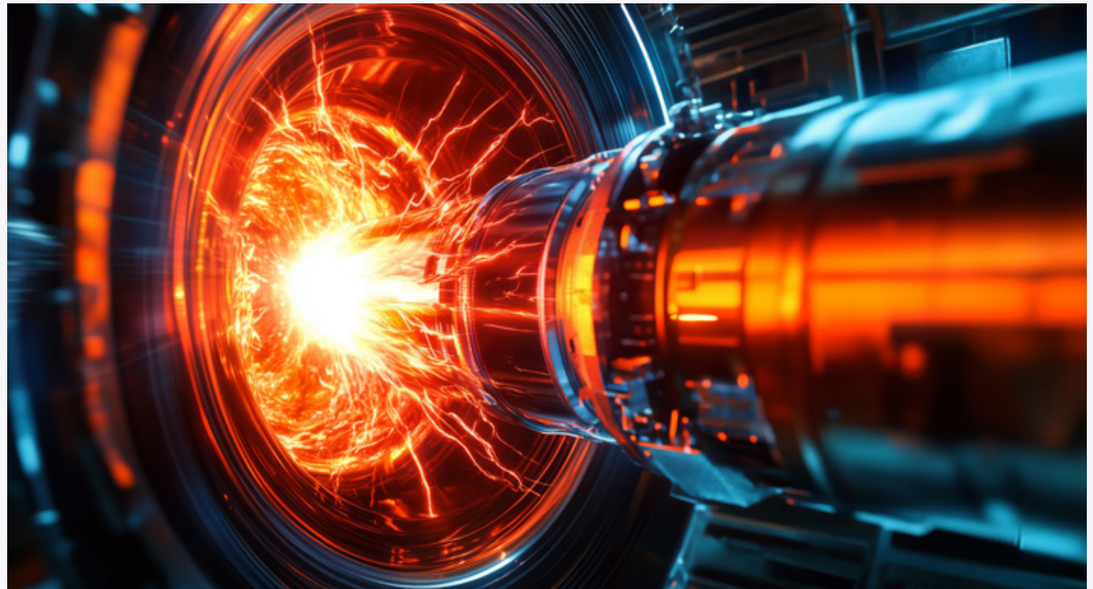
Conclusion

As Canada navigates the complexities of the energy transition, the pivotal role of nuclear power becomes increasingly clear. With electricity demand projected to surge due to electrification across various sectors, the country faces the urgent challenge of meeting this growth sustainably and reliably. In this context, the deployment of new nuclear assets presents a promising solution by providing consistent baseload electricity that aligns with Canada's ambitious decarbonization goals.

Canada possesses unique advantages, including abundant uranium resources, established nuclear infrastructure, a skilled workforce and a robust regulatory framework, which create a strong foundation for expanding nuclear capabilities. However, to fully realize this potential, it is essential to address key obstacles such as high capital costs, financing uncertainty, public perception and waste management concerns. Effectively overcoming these challenges will be crucial for the successful integration of nuclear power into Canada's diverse energy landscape.

With the global nuclear reactor fleet nearing an all-time high of 420 units and 63 reactors currently under construction, Canada has a pivotal opportunity to enhance its energy mix.[103] While renewable energy sources are vital for a sustainable future, they often lack the reliability and capacity for baseload generation that nuclear power offers. By incorporating nuclear energy into a diverse energy strategy, Canada can strengthen its energy security, stimulate economic growth and make significant contributions to global decarbonization efforts.

EY teams have carefully designed a strategic pathway to facilitate a nuclear renaissance. Arguably, Canada has already begun this journey by approving Bruce Power's Life-Extension Program and Major Component Replacement project back in 2015, as well as the Bruce C Project in 2024.[104, 105] It's time for a renewed commitment to nuclear energy as a cornerstone of Canada's sustainable energy future.



How EY can help

The advancement of nuclear power in Canada presents a significant opportunity for both the nation and its business landscape. EY has a proven track record of delivering services to clients in the nuclear deployment sector across numerous countries, including the United Kingdom, France, and others. Our Nuclear Center of Excellence enhances our capabilities by providing essential insights and expertise, ensuring we deliver effective, tailored advice to meet client needs.

EY can serve as a strategic advisor, particularly during the nuclear asset development stage. Our competencies include:

STRATEGY	Developing a deployment strategy that combines vision and ambition to guide actions and align stakeholder expectations.
MARKET RESEARCH	Conducting research to identify nuclear opportunities and draw lessons from other jurisdictions.
FEASIBILITY AND OPTIONS ANALYSIS	Performing comprehensive analyses to assess project viability and inform strategic decisions.
VENDOR ASSESSMENT	Evaluating potential vendors to ensure the selection of the most suitable partners for nuclear projects.
CAPITAL FINANCING AND PLANNING	Providing expertise in capital financing to secure necessary funding and optimize financial strategies.
TARGET OPERATING MODEL	Designing an operating structure that maximizes the value and efficiency of nuclear deployment.

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References

1. International Energy Agency. (2023, July). Electrification - Energy System. https://www.iea.org/energy-system/electricity/electrification

2, 3, 4, 7, 20, 21, 24, 27, 28, 30, 38, 43, 44, 45. Natural Resources Canada. (2024, October). Energy Fact Book 2024-2025. https://energy-information.canada.ca/sites/default/files/2024-10/energy-factbook-2024-2025.pdf

5. ScienceDirect. (2022, May). Assessing energy transition costs: Sub-national challenges in Canada. https://www.sciencedirect.com/science/article/pii/S0301421522001045

6. The Canadian Climate Institute. (2022, May). The Big Switch - Electricity in Canada. https://climateinstitute.ca/reports/big-switch/

8, 9. Transport Canada. (2023, November). Decarbonizing Transportation. https://tc.canada.ca/en/corporate-services/transparency/briefing-documents-transport-canada/2023/current-topics/decarbonizing-transportation

10. Statistics Canada. (2024, January). Watt's up? Electric Vehicles and future electricity generation needs. https://www.statcan.gc.ca/o1/en/plus/5497-watts-electric-vehicles-and-future-electricity-generation-needs

11, 12. International Institute for Sustainable Development. (2022, May). Industrial Electrification. https://www.iisd.org/system/files/2022-05/industrial-electrification-en.pdf

13, 32, 33. Canada Energy Regulator. (2023, November). Canada's Energy Future 2023. https://www.cer-rec.gc.ca/en/data-analysis/canada-energy-future/2023/

14. Natural Resources Canada. (2022, December). Energy Fact Book 2021-2022. https://natural-resources.canada.ca/sites/nrcan/files/energy/energy_fact/2021-2022/PDF/section4_energy-factbook_december9_en_accessible.pdf

15, 17. Canada Energy Regulator. (2024, October). Market Snaphot: Energy demand from data centers is steadily increasing, and AI development is a significant factor. https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/market-snapshots/2024/market-snapshot-energy-demand-from-data-centers-is-steadily-increasing-and-ai-development-is-a-significant-factor.html

16. Greenview Industrial Gateway. (2025, January). Greenview at the Forefront of Innovation. https://greenviewindustrial.ca/greenview-at-the-forefront-of-innovation/

18. Hydro Quebec. (2022, November). Growth in electricity demand expected to continue in Quebec. https://news.hydroquebec.com/news/press-releases/all-quebec/growth-in-electricity-demand-expected-to-continue-in-quebec.html

19. Ernst & Young . (2023, May). Energy Transition in Canada - Pathway to the 2050 Energy System. https://www.ey.com/en_ca/insights/energy-resources/energy-transition-in-canada-pathway-to-the-2050-energy-system

22. Canadian Hydropower Association. (2015, September). 5 Things you need to Know About HydroPower. https://natural-resources.canada.ca/sites/nrcan/files/energy/energy-resources/5_things_you_need_to_know_about_hydropower.pdf

23. International Energy Agency. (2025, February). Electricity 2025. https://www.iea.org/reports/electricity-2025

25. U.S. Department of Energy. (2021, March). Nuclear Power is the Most Reliable Energy Source and It's Not Even Close. https://www.energy.gov/ne/articles/nuclear-power-most-reliable-energy-source-and-its-not-even-close

26. U.S. Department of Energy. (2021, March). 3 Reasons Why Nuclear is Clean and Sustainable. https://www.energy.gov/ne/articles/3-reasons-why-nuclear-clean-and-sustainable

29. Climate Scorecard. (2022, June). Canada's Natural Gas-Powered Electricity Generation Will Double by 2040. https://www.climatescorecard.org/2022/06/canadas-natural-gas-powered-electricity-generation-will-double-by-2040/

31, 39. Canada Renewable Energy Association. (2025, January). By the Numbers. https://renewablesassociation.ca/by-the-numbers/

34. Earth.org. (2025, April). How Climate Change's Influence on Wind Patterns Is Affecting the Wind Power Industry. https://earth.org/how-climate-changes-influence-on-wind-patterns-is-affecting-the-wind-power-industry/

35, 36. WINDExchange. Wind Energy's potential Effects on Wildlife and the Environment. https://windexchange.energy.gov/projects/wildlife

37. Government of Alberta. (2024, December). Summary of Policy Changes. https://www.alberta.ca/system/files/au-fact-sheet-summary-of-policy-changes.pdf

40. Crown Indigenous Relations and Northern Affairs Canada. (2022, June). Arctic solar farm brings light to clean energy challenge. https://www.rcaanc-cirnac.gc.ca/eng/1655146980722/1655147002307

41, 42. ScienceDirect. (2024, December). Solar PV systems under weather extremes: Case studies, classification, vulnerability assessment, and adaptation pathways. https://www.sciencedirect.com/science/article/pii/S2352484724008813

46. World Integrated Trade Solution. (2022). Canada Natural uranium and its compounds, etc exports by country in 2022. https://wits.worldbank.org/trade/comtrade/en/country/CAN/year/2022/tradeflow/Exports/partner/ALL/product/284410

47, 49. Canadian Nuclear Association. Nuclear Fuel. https://cna.ca/reactors-and-smrs/nuclear-fuel/

48. Cameco. (2024, December). Refining: Blind River. https://www.cameco.com/businesses/fuel-services/refining-blind-river

50. Government of Canada. (2024, June). Nuclear disarmament and non-proliferation. https://www.international.gc.ca/world-monde/issues_development-enjeux_developpement/peace_security-paix_securite/nuclear_radiological-nucleaire_radiologique.aspx?lang=eng

51, 53, 54. Natural Resources Canada. (2025, January). The Canadian Nuclear Energy Technology. https://natural-resources.canada.ca/energy-sources/nuclear-energy-uranium/canadian-nuclear-energy-technology

52. World Nuclear Association. (2024). Pickering 1. https://world-nuclear.org/nuclear-reactor-database/details/pickering-1

55. Canadian Nuclear Association. (2025, March). Government of Canada Announces Major Nuclear Energy Investments. https://cna.ca/2025/03/06/government-of-canada-announces-major-nuclear-energy-investments/

56. Natural Resources Canada. (2024, December). Canada's Small Modular Reactor Action Plan. https://natural-resources.canada.ca/energy-sources/nuclear-energy-uranium/canada-s-small-modular-reactor-action-plan

57. Statistics Canada. (2024, December). Analysis of labour challenges in Canada, fourth quarter of 2024. https://www150.statcan.gc.ca/n1/pub/11-621-m/11-621-m2024017-eng.htm

58, 59. Canadian Nuclear Association. (2024, September). Canadian Nuclear Industry: A Powerhouse of Job Creation and Economic Growth. https://cna.ca/2024/09/24/canadian-nuclear-industry-a-powerhouse-of-job-creation-and-economic-growth

60. Canadian Nuclear Safety Commission. (2017, January). Canada's nuclear history. https://www.cnsc-ccsn.gc.ca/eng/resources/canadas-nuclear-history/

61. Canadian Nuclear Safety Commission. (2024, November). List of Regulations. https://www.cnsc-ccsn.gc.ca/eng/acts-and-regulations/regulations/

62. Canadian Nuclear Safety Commission. (2024, January). Convention on Nuclear Safety - National Reports. https://www.cnsc-ccsn.gc.ca/eng/reactors/power-plants/convention-on-nuclear-safety/

63. Ontario Newsroom. (2025, May). Ontario Leads the G7 by Building First Small Modular Reactor. https://news.ontario.ca/en/release/1005889/ontario-leads-the-g7-by-building-first-small-modular-reactor

64. Natural Resources Canada. (2022, September). Canada's SMR Action Plan Progress Update. https://smractionplan.ca/sites/smractionplan/files/2023-01/full-appoved-progress-update-eng-access.pdf

65. Natural Resources Canada. (2025, January). COP28: Declaration to Triple Nuclear Energy. https://natural-resources.canada.ca/energy-sources/cop28-declaration-triple-nuclear-energy-2023

66. Canadian Nuclear Association. (2024, December). Fall Economic Statement Reinforces Commitment to Canadian Nuclear Energy in uncertain times. https://cna.ca/2024/12/16/fall-economic-statement-reinforces-commitment-to-canadian-nuclear-energy-in-uncertain-times/

67. Business Council of Canada. (2023, November). Canada in the New Energy Landscape. https://www.thebusinesscouncil.ca/report/canada-in-the-new-energy-landscape/

68. Canadian Nuclear FAQ. (2022). Cost and Benefits. https://www.nuclearfaq.ca/cnf_sectionC.htm#SectionC

69. World Nuclear Association. (2023, September). Economics of Nuclear Power. https://world-nuclear.org/information-library/economic-aspects/economics-of-nuclear-power#capital-costs

70. ResearchGate. (2016, June). Importance of Advanced Planning of Manufacturing for Nuclear Industry. https://www.researchgate.net/publication/304660691_Importance_of_Advanced_Planning_of_Manufacturing_for_Nuclear_Industry#pf2

73. U.S. Light Energy. (2023, November). How Long Does it Take to Build a Solar Farm?. https://uslightenergy.com/how-long-does-it-take-to-build-a-solar-farm/

72, 73, 75, 90. Clean Prosperity. (2024, May). Nuclear for a Net-Zero Canada. https://cleanprosperity.ca/wp-content/uploads/2024/05/Clean_Prosperity_Nuclear_for_a_Net-Zero_Canada.pdf

74. World Nuclear Association. (2025, June). Nuclear Power Reactors. https://world-nuclear.org/information-library/nuclear-fuel-cycle/nuclear-power-reactors/nuclear-power-reactors

76. Parliament of Canada: House of Commmons. (2022, September). Canada and Radioactive Waste Management : Important Decisions for the Future. https://www.ourcommons.ca/Content/Committee/441/ENVI/Reports/RP11877831/envirp04/envirp04-e.pdf

77. The Council of Canadians. (2022, March). Moving Radioactive Waste is Risky Beyond Measure. https://canadians.org/analysis/moving-radioactive-waste-risky-beyond-measure/

78. Ottawa RiverKeeper. (2024, August). Radioactive Waste in Canada: Looking Back and Looking Ahead. https://ottawariverkeeper.ca/radioactive-waste-in-canada-looking-back-and-looking-ahead/

79. Natural Resources Canada. (2024, December). Canada's Policy for Radioactive Waste Management and Decommissioning. https://natural-resources.canada.ca/energy-sources/nuclear-energy-uranium/canada-s-policy-radioactive-waste-management-decommissioning

80. Natural Resources Canada. (2022, October). Canada's National Statement on Nuclear Energy. https://www.canada.ca/en/natural-resources-canada/news/2022/10/canadas-national-statement-on-nuclear-energy--the-honourable-jonathan-wilkinson-minister-of-natural-resources--the-international-atomic-energy-agen.html

81, 82. Ipsos Public Affairs. (2023, October). Public Opinion About Electricity Generation. https://www.ipsos.com/sites/default/files/ct/news/documents/2023-10/IPSOS%20Public%20Opinion%20Electricity%20Gen%2010.20.23.pdf

83. Last Energy. (2023, November). Navigating Nuclear: Microreactors, SMRs, and Traditional Plants. https://www.lastenergy.com/blog/microreactors-smrs-and-traditional-plants.

84. World Nuclear Association. (2024, July). Nuclear Power in Germany. https://world-nuclear.org/information-library/country-profiles/countries-g-n/germany

85. International Atomic Energy Agency. (2020). Climate Change and Nuclear Power 2020. https://www-pub.iaea.org/MTCD/Publications/PDF/PUB1911_web.pdf

86. World Nuclear Association. (2011, July). Comparison of Lifecycle Greenhouse Gas Emissions of Various Electricity Generation Sources. https://world-nuclear.org/images/articles/comparison_of_lifecycle1.pdf

87, 88. Canadian Nuclear Association. (2023, January). Public Attitudes to Nuclear Power. https://cna.ca/wp-content/uploads/2023/01/Environics-CNA-Final-Report-Jan-2023.pdf

89, 95, 96. Royal Bank of Canada. (2024, May). Think Small: How Canada can make small modular nuclear reactors a priority. https://www.rbc.com/en/thought-leadership/climate-action-institute/energy-reports/think-small-how-canada-can-make-small-modular-nuclear-reactors-a-priority/

91. Stanford University. (2022, May). Stanford-led research finds small modular reactors will exacerbate challenges of highly radioactive nuclear waste. https://news.stanford.edu/stories/2022/05/small-modular-reactors-produce-high-levels-nuclear-waste

92. Ontario Newsroom. (2022, March). A strategic plan for the deployment of small modular reactors. https://www.ontario.ca/page/strategic-plan-deployment-small-modular-reactors

93. Canadian Nuclear Safety Commission. (2023, May). INRA Statement on Small Modular Reactors and International Collaboration. https://www.canada.ca/en/nuclear-safety-commission/news/2023/05/the-international-nuclear-regulators-association-inrastatement-on-small-modular-reactors-and-international-collaboration.html

94. Norton Rose Fulbright. (2022, November). Supercharging Canada's Construction Permitting Woes. https://www.regulationtomorrow.com/ca/supercharging-canadas-construction-permitting-woes/

97. IEA. (2025, January). The Path to a New Era for Nuclear Energy. https://iea.blob.core.windows.net/assets/b6a6fc8c-c62e-411d-a15c-bf211ccc06f3/ThePathtoaNewEraforNuclearEnergy.pdf

98. BrucePower. Life-Extension Program & MCR Project. https://www.brucepower.com/life-extension-program-mcr-project/

99. BrucePower. (2024, August). Bruce Power's Bruce C Initial Project Description sets the stage for the future of Ontario's electricity needs. https://www.brucepower.com/2024/08/12/bruce-powers-bruce-c-initial-project-description-sets-the-stage-for-the-future-of-ontarios-electricity-needs/

100. Carl Farah, "Supercharging Canada's Construction Permitting Woes," Global Regulation Tomorrow, Norton Rose Fulbright, November 8, 2022, https://www.regulationtomorrow.com/ca/supercharging-canadas-construction-permitting-woes/

101. Vivan Sorab, "Think Small: How Canada can make small modular nuclear reactors a priority," RBC Energy Reports, May 14, 2024, https://www.rbc.com/en/thought-leadership/climate-action-institute/energy-reports/think-small-how-canada-can-make-small-modular-nuclear-reactors-a-priority/

102. Vivan Sorab, "Think Small: How Canada can make small modular nuclear reactors a priority," RBC Energy Reports, May 14, 2024, https://www.rbc.com/en/thought-leadership/climate-action-institute/energy-reports/

103. "The Path to a New Era for Nuclear Energy," International Energy Agency, January 2025, https://iea.blob.core.windows.net/assets/b6a6fc8c-c62e-411d-a15c-bf211ccc06f3/ThePathtoaNewEraforNuclearEnergy.pdf

104. "Life Extension Program & MCR Project," Bruce Power, https://www.brucepower.com/life-extension-program-mcr-project/

105. 7 "Bruce Power's Bruce C Initial Project Description sets the stage for the future of Ontario's electricity needs," Bruce Power, August 12, 2024, https://www.brucepower.com/2024/08/12/bruce-powers-bruce-c-initial-project-description-sets-the-stage-for-the-future-of-ontarios-electricity-needs/

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