Signal49
RESEARCH

Time to Build

Nuclear Energy Regulatory Efficiency in Canada, United States, and France

IMPACT PAPER | June 25, 2026

Contents

Key findings

- Based on historical data, despite differences in regulatory structure, the expended times for nuclear licensing in the United States and Canada are broadly comparable, while France remains at an elevated standard. Although France exhibits exceptional regulatory efficiency, Canada retains one of the highest standards for safety and is ranked third globally for the protection of nuclear power plants and facilities.
- Without being shortlisted as a project of national interest in the *Building Canada Act*, it is expected to take 7.7 years to complete an impact assessment and obtain a construction and operating licence for a new nuclear power plant in Canada. In the U.S. and France, this timeframe has been approximately 8 years and 4 years, respectively. Recent regulatory efficiency measures and proposals may reduce these timelines in the future.
- The licensing timeline in Canada could be higher for projects on new sites that use advanced reactor technologies. This is due to their limited operational experience and licensing precedents in Canada and internationally.
- Canada's dual authority regulatory framework, divided between the Impact Assessment Agency of Canada and the Canadian Nuclear Safety Commission, sets it apart from the United States and France, and introduces additional layers of complexity to the regulatory process.
- This dual authority regulatory approach for nuclear projects has inefficiencies. A single regulator could streamline the process, reduce duplicative activities, and improve project coordination, drawing on the precedent set before 2019 when the Canadian Nuclear Safety Commission led both licensing and environmental assessments.
- Along with executive orders, the *Fiscal Responsibility Act* and the *Accelerating Deployment of Versatile Advanced Nuclear for Clean Energy (ADVANCE) Act* in the United States include transformative provisions that are expected to generate substantive gains in regulatory efficiency, potentially reducing licensing timelines well below historical averages for securing construction and operating licences. In the same vein, the *Acceleration of New Nuclear Facilities Act* in France is expected to yield material efficiencies. While the *Building Canada Act* can help, its provisions are restricted to national interest projects. Canada will need targeted regulatory efficiency measures for nuclear energy to compete favourably against its peers.
- As the need for regulatory efficiency intensifies, driven largely by economic and climate considerations, Canada and international jurisdictions elsewhere will need to balance the need for speed with the real and perceived independence and safety standards of nuclear regulators. Regulatory efficiency reforms that may lead to inconsistencies with international safety standards should be avoided. Maintaining alignment with international safety standards will help preserve long-term social licence and public confidence in nuclear energy.
- While countries like the United States and France treat nuclear as a strategic national asset with deep policy, innovation, trade, and security implications, Canada has not fully embraced this posture. Nuclear energy can be positioned as a core component of our industrial and energy policy in Canada. Our ability to build a secure net-zero economy depends on nuclear energy deployment alongside other zero-emissions energy technologies.

Rhetoric meets reality

Canada's nuclear industry is resurgent. As part of a declaration at COP28, Canada committed to tripling global nuclear capacity by 2050. Amid the rhetoric of a grand and speedy nuclear revival, it is important to examine the reality of our regulatory timelines and how we compare with peer countries.

Nuclear energy will play an important role in achieving Canada's net-zero emissions goals by providing a reliable, zero-emissions source of baseload electricity and heat that supports both decarbonization and electrification. There is much at stake regarding Canada's ability to build a net-zero economy. The attraction of investment capital, trade competitiveness, localization of supply chains, and job creation are just a few points of consideration. Nuclear energy accounts for 13 per cent of Canada's electricity and about half of all electricity generated in Ontario. Regulatory efficiency will be critical to scaling nuclear energy capacity at the timelines required for a net-zero economy by 2050. Scaling Canada's nuclear capacity can also strengthen its energy security.

Streamlining regulations: Recent developments

Canada is taking action. The *Building Canada Act* aims to streamline and accelerate federal regulatory approvals for select national interest projects, including nuclear energy.[1] In May 2025, the Premier of Ontario included nuclear energy as a nation-building project in a letter to the Prime Minister,[2] and in September 2025, the Government of Canada shortlisted nuclear energy in its first tranche of nation-building projects. These two actions reflect growing federal and provincial recognition of nuclear energy's strategic importance.

However, while the *Building Canada Act* is a pathway to regulatory efficiency, not all nuclear projects will qualify under its provisions. Comprehensive, sector-specific reforms will be required to deliver the scale and speed of deployment needed for Canada's net-zero future.

In April 2026, Canada committed to releasing a nuclear energy strategy at the end of the year. The following month, the Government of Canada announced new regulatory efficiency proposals for major projects.[3] (See the section "Regulatory innovations.") The call for a review of legislative and regulatory frameworks for nuclear energy to identify opportunities to streamline processes and reduce decision-making timelines offers an important window to deliver regulatory efficiency reforms without compromising safety, engagement, and sustainability.

Pressing questions

In anticipation of regulatory efficiency reforms, it is important to establish an evidence-based baseline for nuclear energy regulatory timelines. In this impact paper, we ask three research questions:

1. How competitive is Canada in comparison to peer countries, in terms of nuclear regulatory efficiency?
2. What are the reasons behind differences in nuclear regulatory efficiency between Canada and its peers?
3. What innovations and reforms have peer countries employed to improve nuclear regulatory efficiency?

1 Justice Canada, Building Canada Act.

2 Premier of Ontario, Letter to The Honourable Mark Carney, Prime Minister of Canada.

3 Government of Canada, "Getting Major Projects Built in Canada."

Regulatory efficiency: A question of time

Regulatory efficiency is a criterion of a "good" or "effective" regulatory process.[4] Improving regulatory efficiency involves measures to reduce the time expended in the regulatory process by the project proponent and the regulator.

In this paper, we examine nuclear energy regulatory efficiency by focusing on the time expended in the regulatory licensing process. We define "time expended" as the elapsed period between the submission of an application by the project proponent and the decision by the responsible authority. The person-hours spent by proponents preparing applications and the person-hours incurred by authorities in arriving at decisions are excluded from this definition. It is important to note that the quality of applications submitted by proponents and the comprehensive nature of the information provided impact regulatory efficiency.

In Canada and across member countries of the International Atomic Energy Agency, the required nuclear regulatory licences are broadly divided into four types:

1. Site preparation (including impact or environmental assessments)
2. Construction
3. Operation (including licence renewals)
4. Decommissioning

We address construction licences, operating licences, and operating licence renewals, focusing mainly on large conventional nuclear power plants with capacities typically in the gigawatt (GWe) scale. Small modular nuclear reactors, which have not yet been built in Canada, are considered peripheral to this paper.[5] Non-commercial nuclear reactors and other nuclear-related facilities are beyond the scope of this research.

4 Hunsberger and others, "Toward 'good process' in regulatory reviews"; and International Atomic Energy Agency, *Assessment of regulatory effectiveness*.

5 Ontario Power Generation is scheduled to bring a small modular nuclear reactor online in 2030.

A retrospective approach

In this study, we take a retrospective approach in assessing nuclear regulatory efficiency for four key reasons.

First, despite major refurbishments, Canada has not commissioned a new nuclear power plant since Darlington Unit 3 in 1993. That said, since 2016, Ontario has undertaken life-extending refurbishments at both the Bruce and Darlington nuclear stations.[6] In November 2025, the province also approved the refurbishment and life extension of the Pickering Nuclear Generating Station.[7] In parallel, regulators have renewed the operating licences for several existing nuclear facilities in recent years, with the most recent being Darlington in September 2025.

Second, the introduction of the *Impact Assessment Act* in 2019 marked a major shift in Canada's regulatory landscape, replacing the *Canadian Environmental Assessment Act* of 2012. The *Impact Assessment Act* introduced a more comprehensive framework that evaluates environmental, economic, health, and social impacts. However, at the time of writing, no nuclear projects have completed the regulatory and licensing process under this Act. In August 2024, in Ontario, Bruce Power began the impact assessment process with its initial project description for a proposed 4,800 MWe Bruce C project.[8] Bruce Power progressed to the impact statement phase in August 2025.[9] In April 2025, in Alberta, Energy Alberta began the impact assessment process for a proposed Peace River nuclear plant.[10] In January 2026, Ontario Power Generation began the impact assessment process for a proposed 10,000 MWe plant in Wesleyville, Ontario.[11].

Third, licence applications to build nuclear plants peaked between the 1960s and 1980s, with most built in North America and Europe. Consequently, available data on regulatory timelines is skewed towards this period.

Fourth, since the Paris Agreement was adopted in 2015, several countries have implemented targeted reforms to enhance regulatory efficiency for nuclear energy projects. These reforms reflect a growing recognition of nuclear power's role in achieving net-zero emissions commitments.

6 The Darlington refurbishment was completed in February 2026.
7 Government of Ontario, "Ontario Greenlights Pickering."
8 Impact Assessment Agency of Canada, "Bruce C Nuclear Project."
9 Impact Assessment Agency of Canada.
10 Impact Assessment Agency of Canada, "Peace River Nuclear Power Project."
11 Impact Assessment Agency of Canada, "New Nuclear at Wesleyville Project."

Canada and its peers

Canada is a pioneer in nuclear energy. It is the second country in the world to control a nuclear fission reaction and has been advancing nuclear research, innovation, and regulatory frameworks since the 1940s.[12] With over 50 years of commercial-scale reactor operation, Canada is currently the sixth-largest producer of nuclear power globally,[13] with operating nuclear power plants that include Darlington, Bruce, and Pickering in Ontario, and Point Lepreau in New Brunswick.

To evaluate Canada's nuclear regulatory efficiency, we selected the United States and France as comparator countries. These countries have established nuclear sectors and take deliberate, strategic approaches to nuclear energy.

The rationale for their selection is outlined in the "Methodology" section and an overview of the nuclear industry profile for the three countries is provided in Table 1 below.

Canada has yet to fully embrace nuclear energy as a strategic national asset in the same manner as the United States and France. Both countries consider nuclear energy as fundamentally intertwined with industrial policy, foreign policy, energy security, and climate objectives. This understanding drives a higher level of motivation and urgency in enabling nuclear deployment. By contrast, Canada risks falling behind, due not to a lack of expertise but to limited efforts being taken to leverage nuclear as a vehicle for advancing our industrial policy and strategic interests.

Table 1

Canada, United States, and France have distinct nuclear industry attributes

Attributes	Canada	United States	France
Number of operating reactors	17	94	57
Number of reactors shut down	8	41	14
Number of reactors in construction	1[a]	1[a]	1[a]
First commercial-scale reactor deployment	1967[b]	1957[b]	1965[b]
Last reactor deployment	1993	2024	2024
Total net nuclear capacity (MWe)	12,714	96,952	63,000
Operating nuclear power plant sites	4	54	18
First nuclear energy regulatory act	*Atomic Energy and Control Act* (1946)	*Atomic Energy Act* (1954)[c]	Measures to Combat Atmospheric Pollution and Odours (1961) and Nuclear Installations Decree No. 63-1228 (1963)[d]
Nuclear regulator	Canadian Nuclear Safety Commission	Nuclear Regulatory Commission	Authority for Nuclear Safety and Radiation Protection
Ownership of nuclear reactors	Public ownership[e]	Mostly private ownership	Public ownership
Number of operating nuclear utilities	3	29	1

Notes:
a. In Canada, a small modular reactor is being constructed in Darlington, Ontario. In the U.S., an advanced reactor is being constructed in Kemmerer, Wyoming. In France, a large Generation III+ reactor is being built in Bugey.
b. The first commercial reactor deployment for Canada was the Douglas Point Nuclear Reactor (200 MWe); for the U.S. this was the Shippingport Nuclear Reactor (60 MWe); and for France this was the Chinon A-2 Reactor (180 MWe).
c. The *Atomic Energy Act* of 1946 did not permit nuclear development for civilian applications. *The Atomic Energy Act* of 1954 provided this provision.
d. These regulations have since been replaced and transferred to the Environmental Code (Articles L591-1 to L597-46).
e. Bruce Power is a private company and does not own the nuclear reactors at the Bruce nuclear plant. It operates the Bruce plant based on a long-term lease with Ontario Power Generation.

Sources: International Atomic Energy Agency; Leger and others; OECD, and Nuclear Energy Agency; U.S. Department of Energy; French Embassy in Washington, DC; World Nuclear News; World Nuclear Association; Nuclear Energy Institute; Signal49 Research.

12 Canadian Nuclear Association, "History of Nuclear in Canada."

13 International Atomic Energy Agency, *Nuclear Power Reactors in the World.*

Regulatory and licensing process

Canada

History

The *Atomic Energy and Control Act* of 1946 is foundational to the regulation and licensing of nuclear power plants in Canada. In the immediate aftermath of the Second World War, Canada created the Atomic Energy Control Board, which operated as the regulatory authority for nuclear facilities in Canada from 1946 to 2000.[14] Then, at the turn of the century, the *Nuclear Safety and Control Act* came into force,[15] establishing the Canadian Nuclear Safety Commission as a successor to the Atomic Energy Control Board. The Act gave the Commission increased legal powers, and independence, and placed more emphasis on the safety and health of persons and the environment.[16]

Among other regulatory activities related to national security and compliance with international obligations,[17] the Canadian Nuclear Safety Commission is the regulatory authority for all required nuclear licences over a power plant's life cycle: site licences, construction licences, operating licences (including renewal), and decommissioning licences. These licences are governed in accordance with the Commission's regulatory documents (known as REGDOCs). They also involve processes, which are outlined in Appendix B.

Key features

The Canadian Nuclear Safety Commission has made consultation and collaboration with Indigenous nations and communities an important part of its regulatory approach. Recognizing the importance of Indigenous engagement, the Commission is responsible for fulfilling the Crown's duty to consult, as outlined in section 35 of the *Constitution Act* of 1982.[18] This constitutional obligation is distinctive in comparison to the Commission's American and French counterparts.

In support of Indigenous engagement, the Commission launched the Indigenous and Stakeholders Capacity Fund, designed to complement the Impact Assessment Agency of Canada's Participant Funding Program. While the Participant Funding Program mainly supports participation in licensing hearings, the Indigenous and Stakeholders Capacity Fund provides broader support, enabling Indigenous peoples and stakeholders to engage with the Commission throughout the regulatory life cycle, not just during formal proceedings. This initiative is intended to support transparency and Indigenous participation throughout the nuclear regulatory process. Beyond Indigenous engagement, public participation is an imperative to its activities, where public hearings, public disclosure of licensing information, and licensing decisions are core tenets of its regulatory mandate.

14 Canadian Nuclear Safety Commission, "History of the Canadian Nuclear Safety Commission." Under the Nuclear Safety and Control Act, nuclear facilities include nuclear power plants, uranium mines or mills, and radioactive waste disposal facilities.

15 The Nuclear Safety Control Act received Royal Assent in 1997.

16 Justice Canada, Nuclear Safety and Control Act. The Canadian Nuclear Safety Commission is a court of record, with powers to issue summons for the provision of evidence, administer oaths, and examine persons under oath.

17 For instance, Canada is a contracting party to the 1994 Vienna Convention on Nuclear Safety.

18 Justice Canada, Constitution Act, 1982.

Recent changes: Impact assessments

Under the *Canadian Environmental Assessment Act* of 2012, the Canadian Nuclear Safety Commission was responsible for conducting environmental assessments for proposed nuclear power plants. The *Impact Assessment Act* of 2019 changed that: responsibility for impact assessments now lies with the Impact Assessment Agency of Canada and assessments are conducted by an independent review panel.

Under the new regime, the Canadian Nuclear Safety Commission plays an advisory role, providing technical expertise to the Impact Assessment Agency of Canada as a minority representative on the review panel.[19] In essence, Canada has evolved from a single life cycle regulator to a dual-authority model.

This dual-authority model contrasts with approaches taken by peer jurisdictions. In the United States, the Nuclear Regulatory Commission has full responsibility for both environmental assessments and licensing decisions. In France, the Minister for Nuclear Safety holds final decision-making authority, but relies on expert input from that country's nuclear safety regulator, the Authority for Nuclear Safety and Radiation Protection. A comparison of the attributes of the Impact Assessment Agency of Canada and the Canadian Nuclear Safety Commission with our American and French counterparts is presented in Table 2 below.

In Canada, the impact assessment process is a prerequisite to obtaining a site licence. (See Appendix B.) The Impact Assessment Agency of Canada estimates that our country's impact assessment process takes between 4.5 and 5.4 years to complete.[20] As outlined by the Canadian Nuclear Safety Commission, the expected timelines for a site licence is 2 years, a construction licence 2.7 years, and an operating licence 2 years,[21] for a total of 6.7 years. All told, the impact assessment process by the Impact Assessment Agency of Canada and the licence review process by the Canadian Nuclear Safety Commission would take about 11.2 to 12.1 years if completed in sequence and with no efforts made to streamline the process.

In 2024, the Canadian Nuclear Safety Commission worked with the Impact Assessment Agency of Canada to streamline the impact assessment process and reduce the timeline to 3 years,[22] including the issuance of a site licence. This would make the completion of an impact assessment and the issuance of construction and operating licences to be completed in 7.7 years. However, there is room for improvement. (See the section "Regulatory innovations.")

19 Canadian Nuclear Safety Commission, "Impact Assessment Act – Presentation."
20 Impact Assessment Agency of Canada, "Impact assessment 101."
21 Canadian Nuclear Safety Commission, "REGDOC-3.5.1."
22 Impact Assessment Agency of Canada, "Red Tape Progress Report."

United States

History

The regulation of nuclear energy in the United States began with its use for military applications as indicated in the *Atomic Energy Act* of 1946, which led to the creation of the Atomic Energy Commission, a federal nuclear regulatory authority.[23] Less than a year after the Atoms for Peace speech by President Dwight D. Eisenhower,[24] the regulatory and licensing framework for civilian use of nuclear energy in the U.S. was enshrined in the *Atomic Energy Act* of 1954.

The 1954 Act had the dual role of encouraging the use of nuclear energy while regulating its safety. However, due to criticism about the Atomic Energy Commission's safety standards and the protection of civilian health and the environment, in 1974 the U.S. passed the *Energy Reorganization Act*.[25]

The *Energy Reorganization Act* separated the licensing and regulatory functions of the Atomic Energy Commission from its nuclear energy research and development functions.[26] It created the Nuclear Regulatory Commission, assigning it the regulatory and licensing functions of the Atomic Energy Commission. The research and energy development functions of the Atomic Energy Commission were transferred to the Energy Research and Development Administration, which is now part of the Department of Energy.

Key features

Since 1974, the Nuclear Regulatory Commission has been the regulatory authority for nuclear energy licensing. Among other regulatory obligations defined in the *Energy Reorganization Act*, the Commission licenses the siting, construction, operation (including renewals), and decommissioning of nuclear power plants. Construction licences are governed by Title 10 of the Code of Federal Regulations Part 50 (10 CFR Part 50) and Title 10 of the Code of Federal Regulations Part 52 (10 CFR Part 52).[27] The processes and regulations involved in the U.S. licensing process are outlined in Appendix B.

Similar to the Canadian licensing and regulatory framework, public participation, the dissemination of information to the public, and transparency for licensing decisions have been of considerable importance to the regulatory mandate of the U.S. Nuclear Regulatory Commission. Recent reforms have added flexibility to the nature and timing of mandatory public hearings. (See the section "Nuclear executive orders.") The Commission has a sophisticated and extensive database, called the Agency Wide Documents Access and Management System (ADAMS).[28] The database contains readily available public interest information, including historical and recent documentation on issued licences, inspections, correspondence, and orders.

While the Canadian Nuclear Safety Commission does disseminate public interest information, it currently does not have a comparable system to ADAMS.

23 U.S. Nuclear Regulatory Commission, "History."
24 International Atomic Energy Agency, "Atoms for Peace Speech."
25 Walker, *Containing the Atom*.
26 U.S. Nuclear Regulatory Commission, Energy Reorganization Act of 1974.
27 U.S. National Archives, "Part 50 – Domestic Licensing"; and "Part 52 – Licenses, Certifications, and Approvals."
28 U.S. Nuclear Regulatory Commission, "ADAMS Public Search."

France

History

In France, the Commissariat à l'Énergie Atomique was created in 1945 by the provisional government of General Charles De Gaulle.[29] That said, the regulatory and licensing framework for nuclear energy has been somewhat fragmented in this country. Since the commissioning of its first commercial-scale nuclear plant in 1964, nuclear regulation has been largely overseen by environmental protection laws and a nuclear installation decree dating back to 1963.[30] Unlike in Canada and the United States, there was no comprehensive nuclear-specific statute or independent authority for nuclear energy in France until 2006.

In 2006, France passed the *Act on Transparency and Security in the Nuclear Field*. The Act created the Nuclear Safety Authority, an independent nuclear administrative authority responsible for issuing operating licences for nuclear power plants. Until then, the entities responsible for regulating nuclear power plants had been part of the French government.[31] For instance, in 1973 a division in the Ministry for Industry was created and put in charge of regulating nuclear installations. Today, the government is still responsible for issuing construction licences for nuclear power plants; this responsibility lies with the Minister in charge of nuclear safety, who grants a construction licence based on a proposal from the Nuclear Safety Authority.

In January 2025, the Nuclear Safety Authority and the Institute for Radiological Protection and Nuclear Safety were merged to create the Nuclear Safety and Radiological Protection Authority.[32] By combining regulatory and research expertise into a single entity, France aims to improve nuclear safety governance in that country.

Key features

Unlike Canada and the United States, the licensing of nuclear power plants in France is partly the responsibility of the government. Decisions on regulatory licences for the siting and construction of nuclear power plants are made by authorization decrees granted by the executive branch of the government. The government consults with the Nuclear Safety and Radiological Protection Authority, which provides expert opinion on licensing applications to the Minister responsible for nuclear safety. The regulatory process for the issuance of nuclear licences is outlined in Appendix B.

France has a unique vehicle of public participation not found in Canada or the United States. Public participation and disclosure of information are essential elements of the licensing process. Authorization decrees can only be issued after a public inquiry by community engagement entities. These entities, called local information committees, were established under the *Act on Transparency and Security in the Nuclear Field* for nuclear power plants. The local committees consist of municipal and regional councils, environmental protection organizations, trade unions, and other parties. They are site-specific, exist beyond the timeframe of a nuclear licence application or construction activities, and are generally tasked with providing advice on the nuclear safety, radiation protection, and impact of nuclear power plants on persons and the environment in terms of site location. They have a limited role in the licensing of new power plants.[33]

29 CEA, *The Military Applications Division*. Today, the French CEA is called the Alternative Energies and Atomic Energy Commission.

30 Leger and others, "Nuclear Transparency and Safety Act."

31 Lachaume, "Nuclear Safety and Radiation Protection."

32 Authority for Nuclear Safety and Radiation Protection, *The French Authority for Nuclear Safety*.

33 National Commission for Public Debate, "CNDP, an independent entity."

Table 2

The nuclear regulators in Canada, United States, and France have important differences and similarities

Attribute	Impact Assessment Agency of Canada	Canadian Nuclear Safety Commission	U.S. Nuclear Regulatory Commission	France's Authority for Nuclear Safety and Radiation Protection
Establishment year	1994	2000	1974	2025
Full-time employees	576[a]	1,015[b]	2,921[c]	2,085[d]
Number of reactors licensed[e]	NA	25	134	70
Budget (C$ millions)	107[f]	166[f]	1,284[g]	608[h]
Budget per employee (C$)	185,763	163,547	439,575	291,607
Employees per regulated reactor	NA	41	22	30
Number of commissioners or panel members	31	5	5	5
Term of commissioner appointments (years)	NA	5	5	6
Number of regional offices	7	4	4	11

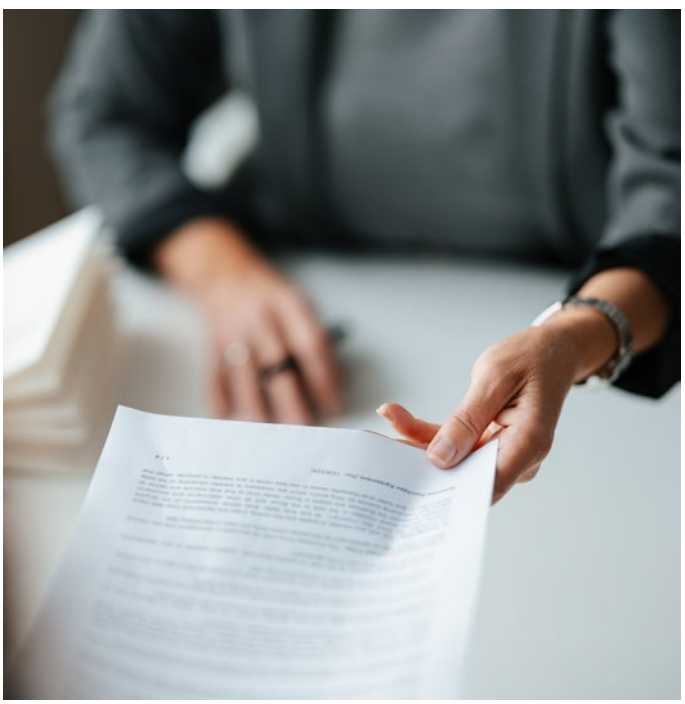
Notes:
a. Based on the number of full-time employees during fiscal year 2025.
b. Based on the number of full-time employees during fiscal year 2025.
c. Based on the estimated number of full-time employees during fiscal year 2025. Based on a hearing by the U.S House of Representatives' Energy and Commerce Committee on April 22, 2026, since January 2025, 500 employees have left the Nuclear Regulatory Commission, while 65 have been hired to date.
d. Based on the estimate provided by ASNR.
e. This is the summation of all commercial reactors built, including operational reactors, reactors that have been shut down, and those that are being decommissioned.
f. Based on the budget for the 2025 fiscal year.
g. Based on the enacted budget for the 2025 fiscal year.
h. Based on the 2025 data reported by the Authority for Nuclear Safety and Rdaiation Protection.

Sources: Impact Assessment Agency of Canada, 2025; Canadian Nuclear Safety Commission, 2025; U.S. Nuclear Regulatory Commission, 2025; Authority for Nuclear Safety and Radiation Protection, 2025; Signal49 Research.

The licence to build

Canada

Publicly available data on construction licences for Canada's nuclear reactors is limited and, in many instances, incomplete. We underscore some limited historical examples and more recent cases for illustrative reasons. For the Darlington-1 nuclear power plant, for example, the application for a construction licence was submitted in 1978 and took 3.2 years until final approval.[34] More recently, Ontario Power Generation submitted a construction license application for the Darlington New Nuclear SMR Project in October 2022, which was approved in April 2025 taking an expended time of 2.5 years.[35] (See Chart 1.) This expended time falls within the guidance provided by CNSC, which states a licensing timeline of 2.7 years.[36]



United States

The expended time for construction licences in the United States has risen steadily from the mid-1960s to the late 2000s. (See Chart 1.) Before 1989, the licensing processes for constructing and operating new nuclear power plants were separate and done in sequence. During this period, all nuclear power plants were licensed under the regime of 10 CFR Part 50.[37] From 1965 to 1974, the average expended time for securing construction licences was 2 years, with some outliers. For example, two applications for the Shearon Harris and Seabrook nuclear power plants exceeded 6 and 7 years, respectively. The initial Seabrook site was too close to an air force base and had to be moved,[38] while major changes were made to the Shearon Harris application due to adverse economic conditions.

In response to criticisms about the inefficiencies of its two-step licensing process, the United States introduced 10 CFR Part 52 in 1989.[39] Aside from introducing standardized reactor designs and manufacturing licenses, 10 CFR Part 52 allowed for combined construction and operating licence applications. Since then, the average expended time for successful licence applications has been 6.6 years. (See Chart 3.) This is a 19 per cent reduction compared to the average combined expended time of 8 years for construction and operating licences under Part 50 from 1965 to 1983. However, this lower expended time is in large part due to the short licensing time of the Summer and Vogtle nuclear power plants, which each took about 4 years. All other projects licensed under 10 CFR Part 52 took 8.2 years on average, similar to the total average time to obtain both a construction licence and an operating licence under 10 CFR Part 50. (See the section "The licence to operate.")

34 Based on data received from the Canadian Nuclear Safety Commission.
35 Canadian Nuclear Safety Commission, "Darlington New Nuclear Project timeline."
36 Canadian Nuclear Safety Commission, "REGDOC-3.5.1."
37 U.S. National Archives, "Part 50 - Domestic Licensing."
38 New York Times, The, "Chronology of Seabrook."
39 Proponents of nuclear energy projects in the U.S. still have the option of securing licences under 10 CFR Part 50.

The quicker licensing timelines for the Summer and Vogtle nuclear power plants can be attributed to two key factors. First, construction for both projects began early, unlike other comparable projects. While most of the construction would have had to occur after the combined licensing process, beginning construction early helped to streamline overall timelines. Second, Vogtle benefited from U.S. Department of Energy loan guarantees, which provided essential financial support for construction. In contrast, other applicants under the 10 CFR Part 52 process did not receive such support.[40] This lack of funding created a wait-and-see dynamic, with many developers delaying further investment or the application process until the outcomes of these two projects became clear.

In short, nuclear construction licensing timelines in the United States are influenced by the regulatory process of the Nuclear Regulatory Commission as well as the quality of applications and the strategic decisions of project proponents. Table 3 provides additional context on 10 CFR Part 52 applications, noting that most successful applications are associated with existing nuclear sites.

France

The French authorization decree provides the project proponent the licence to construct a nuclear power plant. As set out in the decree, the proponent works with the Authority for Nuclear Safety and Radiation Protection to define the design and construction requirements for the nuclear power plant as it deems necessary for nuclear safety.[41] The French government and regional prefects then carry out a consultation process with the local environmental authority, water commission, and municipalities affected by the project, along with a public inquiry. The Minister responsible for nuclear safety grants the authorization decree to the Authority for Nuclear Safety and Radiation Protection and the project proponent, should the application be successful. The processing time for authorization decree applications is 3 years, but this timeline may be extended to 5 years if the project is more complex.[42]

Historically, the expended time in securing authorization decrees for nuclear power plants has risen steadily from the 1970s to the 1990s. An authorization decree application started in the 1970s took about 2.8 years, on average, to complete, while an application started in the latter half of the 1980s took about 3.9 years to complete. (See Charts 1 and 2.) The exceptional time expended in securing the authorization decree for the Civaux 1 and 2 nuclear plants, which took 7.6 years due to major design and construction issues, is partly responsible for this increased timeline.[43]

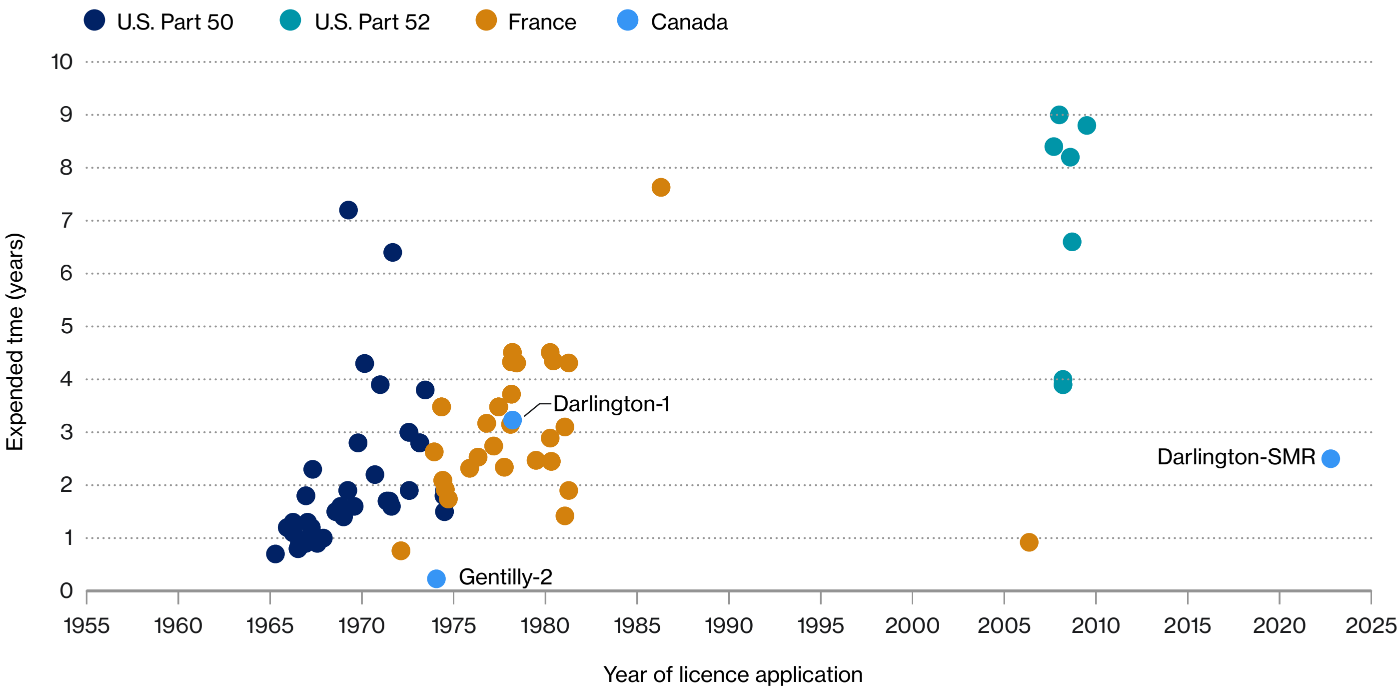
In more recent years, the expended time for securing construction licences has trended down. For example, the authorization decree for the Flamanville-3 nuclear plant was applied for on May 9, 2006, and approved less than a year later on April 10, 2007. Although the application was for an existing nuclear site, which typically have shorter timelines than new sites, the expended time is exceptional. In comparison, five of the seven applications made in the United States between 2007 and 2009 were for existing sites and had average expended times of 6.3 years. (See Table 3.)

40 World Nuclear News, “Georgia Power accepts Vogtle loan guarantee.”
41 Government of France, Environmental Code.
42 Government of France.
43 Power Technology, “Civaux 1-2.”

Chart 1

The expended time to obtain a construction licence has risen since the mid-60s

(number of years)



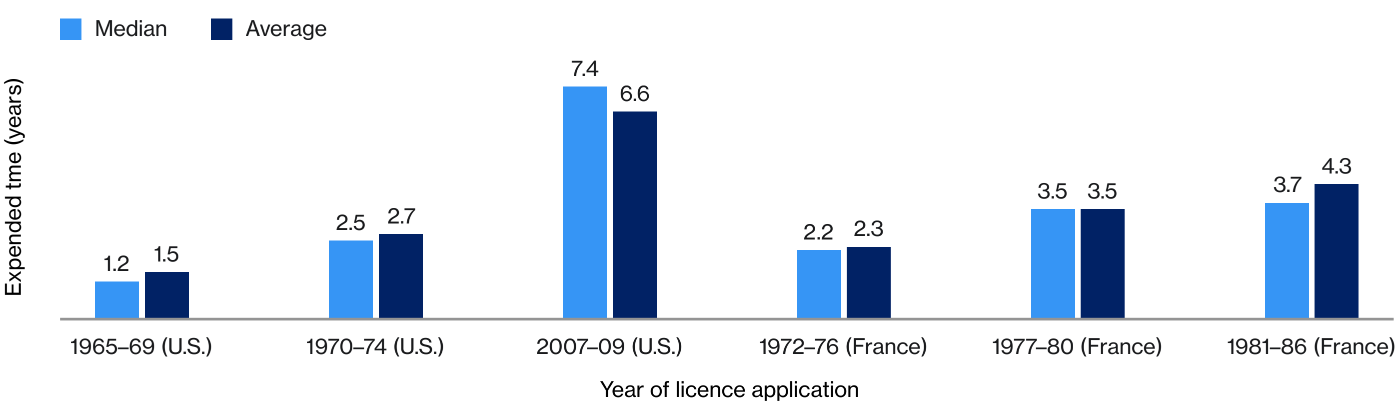
Note: U.S. data is based on 55 construction licence applications under the Code of Federal Regulations (CFR), Part 50, and 7 combined licence applications under the CFR, Part 52. French data is based on 57 applications to create new nuclear reactors.

Sources: U.S. Nuclear Regulatory Commission, “ADAMS Public Search”; Reid and others; Official Journal of the French Republic; Canadian Nuclear Safety Commission; Signal49 Research.

Chart 2

The expended time to obtain a construction licence has risen steadily in the United States, compared to France

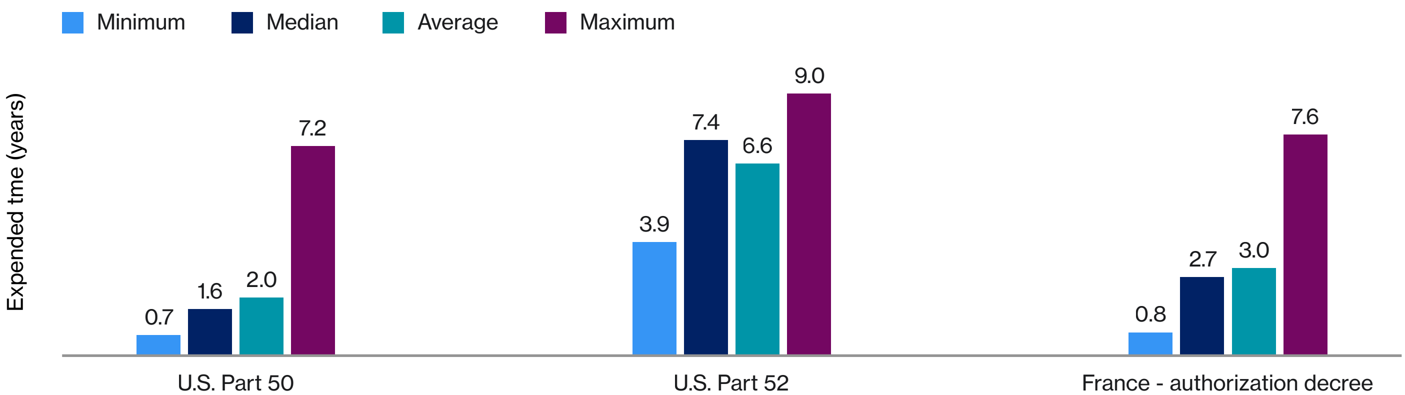
(number of years)



Sources: U.S. Nuclear Regulatory Commission, “ADAMS Public Search”; Reid and others; Official Journal of the French Republic; Signal49 Research.

Chart 3

The expended time for construction licences evolved with different regulatory regimes
(number of years)



Sources: U.S. Nuclear Regulatory Commission, “ADAMS Public Search”; Reid and others; Official Journal of the French Republic; Signal49 Research.

Table 3

U.S. combined construction and operation licences (Part 52)

Reactor site	Application date	Decision date	Time expended	Status	Site
Turkey Point (Florida) Units 6 and 7	30-Jun-09	5-Apr-18	8.8 years	Paused	Existing site
Fermi (Michigan) Unit 3	18-Sep-08	30-Apr-15	6.6 years	Paused	Existing site
Levy (Florida) Units 1 and 2	30-Jul-08	20-Oct-16	8.2 years	Cancelled	New site
Vogtle (Georgia) Units 3 and 4	28-Mar-08	9-Feb-12	3.9 years	Operational	Existing site
Summer (South Carolina) Units 2 and 3	27-Mar-08	30-Mar-12	4.0 years	Cancelled	Existing site
William States Lee III (South Carolina) Units 1 and 2	13-Dec-07	15-Dec-16	9.0 years	Paused	New site
South Texas Project (Texas) Units 3 and 4	20-Sep-07	9-Feb-16	8.4 years	Cancelled	Existing site

Note: “Executive Order 14302—Reinvigorating the Nuclear Industrial Base,” issued in May 2025, provides funding for the restart, completion, or capacity increase of nuclear power projects and commits the United States to having 10 new large reactors with complete designs under construction by 2030. Driven by increased demand for reliable, zero-emissions electricity, including from AI data centres, some of the paused or cancelled projects may be granted a new lease of life. For instance, after the termination of the Summer Units 2 and 3 sites, Brookfield Asset Management and The Nuclear Company announced plans to revive the project in May 2026.
Sources: U.S. NRC, South Texas Project, 2011; U.S. NRC Virgil C. Summer, 2011; U.S. NRC Vogtle, 2011; U.S. NRC, 2012; U.S. NRC Fermi, 2013; U.S. NRC William States Lee III, 2013; U.S. NRC, 2015; Signal49 Research.

Underlying factors: United States and France

United States

As shown in Chart 2, the average expended time in securing construction licences in the United States nearly doubled when comparing the period of 1965 to 1969 against 1970 to 1974. This is mainly due to four factors: the impact of regulation; the evolution in reactor scale; the availability of human resources in licensing and regulation; and rising environmental consciousness.

Evolving regulations

Based on a questionable interpretation of section 102 of the *Atomic Energy Act* of 1954, the Atomic Energy Commission licensed commercial scale reactors built in the mid-1960s as research reactors under section 104.[44] This exempted them from a pre-licensing anti-trust review that was mandatory for commercial-scale reactors. This changed in 1970. An amendment to the Act resulted in the U.S. Department of Justice being required to review applications for construction licences.[45] This increased the due process and timeline for construction licences.

An important change in the regulatory landscape also occurred in 1970. Amid growing societal concerns for the protection of the environment and human health, the *National Environmental Policy Act* became law. The consequences on expended time were substantial. This Act introduced the requirement for environmental assessments and environmental impact statements.[46] Nuclear licensing was in unchartered waters. It also meant that nuclear licences would have to account for the environmental impacts of nuclear projects more broadly, beyond those concerned with radiation. After offering some initial resistance to embedding the full extent of the Act's provisions in its licensing process, the Atomic Energy Commission was mandated by the courts to comply in 1971.[47]

The Three Mile Island nuclear accident in 1979 had a considerable impact on the expended time and utility interest in building new nuclear. In the aftermath of the Three Mile Island accident, emergency planning, security plans, fire protection, and environmental qualification of electrical equipment requirements were introduced in nuclear licensing. In essence, the definition of nuclear safety and risk management evolved. These requirements impacted many plants still in construction and required retrofits to their design.[48] Recent changes to the U.S regulatory landscape have also impacted the *National Environmental Policy Act* (NEPA). (See the section "Regulatory innovations.")

Reactor scale

In the mid-1950s, nuclear energy was in its infancy in the United States and pioneering plants had capacities typically in the low hundreds of MWe. For instance, the Yankee Nuclear Power Station in Massachusetts, which became operational in 1961 under the Atomic Energy Commission's demonstration program, had a reactor capacity of 140 MWe.[49] The Dresden nuclear reactor in Illinois, which became operational a year earlier in 1960, had a capacity of 197 MWe.[50] By the mid-1960s, reactor sizes were up to nine times higher. (See Chart 4.) These larger plants were complex for regulators to license, as they were built based on design extrapolations from smaller plants and introduced several precedents and uncertainties.[51] It took more time for the nuclear regulator, the Atomic Energy Commission, to grapple with these issues.

44 Walker, *Containing the Atom*; and U.S. Department of Energy, "Atomic Energy Act."

45 Walker, *Containing the Atom*.

46 United States Environmental Protection Agency, "Summary."

47 Walker, *Containing the Atom*.

48 Organisation for Economic Co-operation and Development, and Nuclear Energy Agency, *Nuclear Law Bulletin*.

49 Nuclear Newswire, "A Yankee Success Story"; and Walker, *Containing the Atom*.

50 Dresden was the first nuclear power plant to be privately owned in the United States; International Atomic Energy Agency, "*Nuclear Power Reactors in the World.*"

51 Walker, *Containing the Atom*.

A talent shortfall

The Atomic Energy Commission had a workforce of about 7,000 employees in the 1960s,[52] which was more than double the current workforce of its successor institution. (See Table 2.) However, the share of regulatory staff within the Commission was less than 5 per cent in 1964. While efforts were made to increase regulatory staff, growing from 339 workers in 1964 to 540 workers in 1971, this expansion was dwarfed by the surge in licence applications. For context, nuclear accounted for 17 per cent of the country's electric plant orders in 1965; two years later, this was 49 per cent. From 1965 to 1970, nuclear licence applications grew by 600 per cent. In 1966 alone, 23 construction licences were issued.[53] The gap between regulatory talent and an industry in full bloom increased the time spent in issuing licence applications.

The environmental movement

In the formative years of nuclear energy in the U.S., many of the proceedings for public hearings went unchallenged.[54] By the late 1960s, buoyed by the environmental movement of the time and a mistrust of the Atomic Energy Commission, intervenors intensified their resistance to nuclear licensing out of concern for public health and the environment. These interventions extended the timelines of public hearings and strained regulatory staff at the Atomic Energy Commission.[55]

France

France faced a similar experience in the time it took to secure construction licences during the early 1970s and into the latter part of the decade. (See Charts 1 and 2.) However, the increase in expended time was not as steep as that experienced in the United States and did not rise as meaningfully. Multiple factors were at play.

The power of repetition

France only had one publicly owned nuclear utility and one major manufacturer of nuclear and non-nuclear plant components, Framatome and Alstom, respectively.[56] This simplicity of system actors and fewer moving parts had powerful consequences. It allowed for a high degree of standardization in nuclear reactor designs and their deployment as fleets. As shown in Chart 4, the nuclear reactors deployed were of identical sizes in many cases. This is in sharp contrast to the highly heterogenous nuclear reactors deployed by tens of utilities in the United States. Design standardization and repetition in deployment led to simpler regulatory reviews and shorter expended timelines. But France also had its challenges.

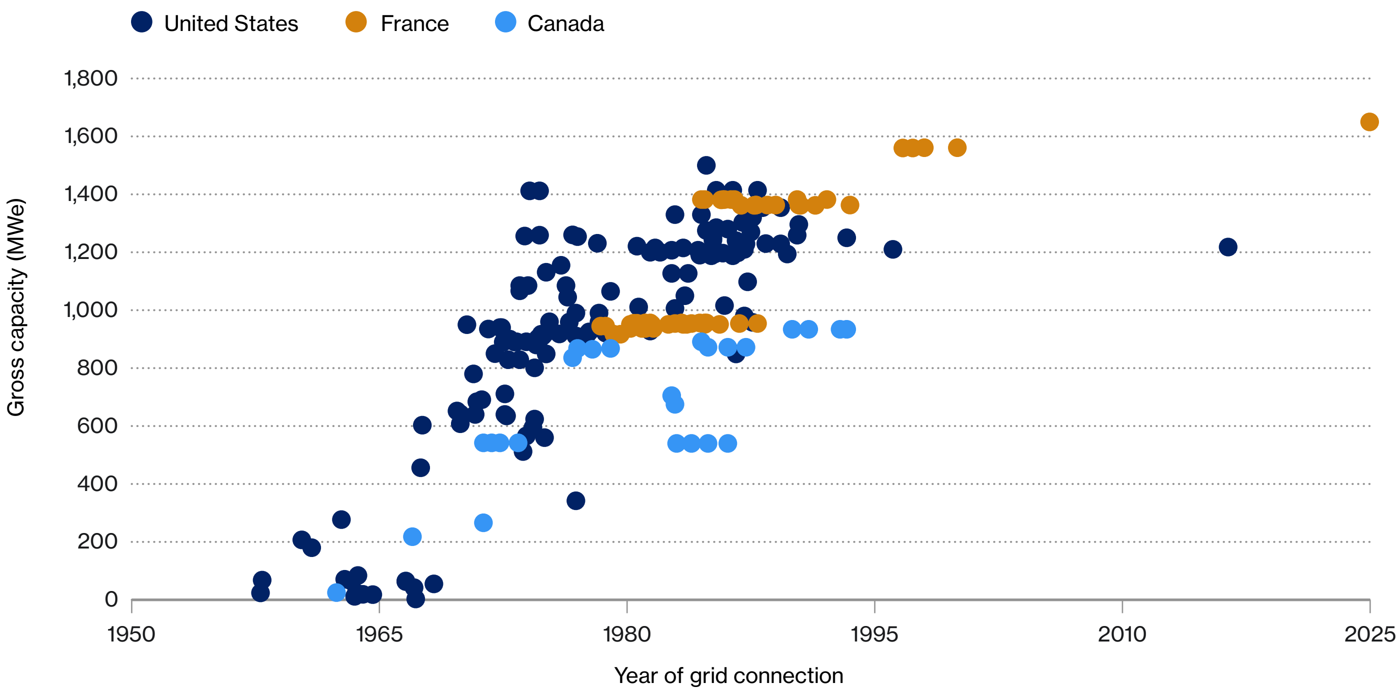
Coherence amid chaos

The oil embargo of the early 1970s was chaotic for oil-importing countries in the west. Due to this challenge, nuclear energy was considered strategic to the national interests of France and its energy independence from oil. The political, regulatory, and utility actors relevant to the deployment of nuclear in France were more cooperative and coherent in advancing their interests, in contrast to the adversarial and somewhat combative dynamic in the United States.[57] This laid the groundwork for a government-backed nuclear deployment program with less friction.

52 Walker.
53 Walker.
54 Organisation for Economic Co-operation and Development, and Nuclear Energy Agency, Nuclear Law Bulletin.
55 Walker, *Containing the Atom.*
56 U.S. Congress, *Nuclear Powerplant Standardization.*
57 Golay and others, "Comparative analysis."

Chart 4

France and Canada have a higher degree of standardization in reactor design
(gross capacity, MWe)



Sources: Impact Assessment Agency of Canada; International Atomic Energy Agency; Signal49 Research.

Public participation guardrails

Similar to the United States, there were spirited opponents to nuclear deployment in France. However, government-sanctioned protections for nuclear plants highlight a difference in the degree of public participation between France and the United States in the 1970s. Once authorization decrees were issued and construction of nuclear plants had commenced, these plants achieved "public utility status."

This status essentially granted the right for project proponents to expropriate private land needed to site projects and recognized nuclear plants as a national effort.[58] However this status ultimately had limited impact on the licensing process, and no public participation was directly part of the licensing process.[59] In essence, while public participation existed in France, there were guardrails that limited its reach until the mid-2000s.

58 Golay and others.

59 Golay and others.

The licence to operate

Canada

The 1970s and 1980s were the boom years for the commercial nuclear industry in Canada. Though available data on Canadian operating licences is mostly for the latter part of this period, the expended time for securing operating licences varied over time—from an initial high of 2 to 2.5 years for reactors at Pickering and Bruce in the early 1980s to about 4 months for Darlington's Unit 4 reactor. The average expended time for operating licences in Canada was less than 1 year from 1980 to 1992. (See Chart 5.)

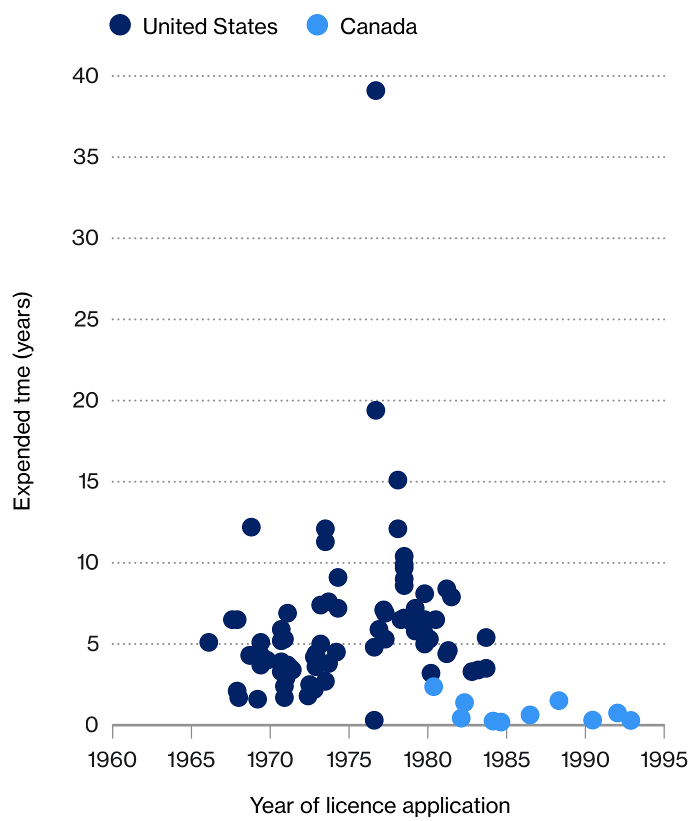
Importantly, these licences were granted before the current *Nuclear Safety and Control Act* of 2000 was enacted. They would not be feasible today, as the licensing process and expectations of regulators has changed significantly since the 1970s. At the time, the Atomic Energy Control Board had limited public involvement mechanisms for the licensing of nuclear power plants. Today, public participation and Indigenous engagement are imperative to the Canadian Nuclear Safety Commission's activities.

Learning by doing

The decline in expended time for operating licences in Canada from 1980 to 1992 is mainly attributed to increased regulatory experience. The nuclear industry and the Atomic Energy Control Board (the regulator at the time) were becoming more experienced with the licensing submission and review process—they were learning by doing. Consequently, regulatory efficiencies were realized due to improvements in the quality of applications and the know-how and familiarity of the regulator. Similar to France, Canada deployed a fleet of Canada Deuterium Uranium (CANDU) reactors during this period. While the sizes of the reactors varied slightly, they were built using the same foundational design by Atomic Energy Canada Limited. The homogeneity of reactor technologies eased the time spent on regulatory reviews.

Chart 5

Expended time to obtain an operating licence is lower in Canada than in the United States
(number of years)



Note: Canadian data is based on 10 licence applications and has been adjusted to the mid-month (original data only provided the month of the application). U.S. data is based on 79 operating licence applications under the Code of Federal Regulations, Part 50. The Watts Bar Units 1 and 2 nuclear reactors are outliers in the U.S. dataset, as they took 19 and 39 years, respectively, to secure operating licences due to construction and operating regulatory deficiencies, and an extended project suspension by the licensee. The impact of these outliers on the average expended time is minor; their exclusion reduces the average from 6 to 5.6 years.
Sources: U.S. Nuclear Regulatory Commission, "ADAMS Public Search"; Reid and others; Canadian Nuclear Safety Commission; Signal49 Research.

United States

To obtain an operating licence, applicants must demonstrate that construction was completed in accordance with the terms of the construction permit. They must also show that the proposed operations will comply with the Nuclear Regulatory Commission's regulations governing public health and safety, and that they have the technical expertise and financial resources to operate the nuclear reactor facility. Applicants must also submit an updated environmental assessment and emergency response plan and be prepared to participate in a public hearing if one is requested.

The time required to secure an operating licence under 10 CFR Part 50 has steadily increased since the 1970s, reflecting broader trends in nuclear licensing. This increase is mostly due to evolving regulatory standards, stricter definitions of nuclear safety, larger and more complex reactor designs, a shrinking pool of technical experts, and growing public concern over environmental impacts.

Between the mid-1960s and the mid-1980s, the average time to obtain an operating licence under the traditional 10 CFR Part 50 process was about 6 years. When accounting for the time needed to secure a construction permit, the total licensing timeline during this period, excluding site approval, averaged 8 years.

France

In France, the issuance of operating licences, or commissioning authorization applications, falls under the purview of the Authority for Nuclear Safety and Radiation Protection. This contrasts with the construction licensing process, where the government plays an important role. For operating licences, the project proponent works with the Authority to outline a detailed safety report, operating rules, emergency plan, decommissioning plan, environmental impact study, and risk control study. After the Authority deems that the project complies with all safety standards, it authorizes the commissioning of the nuclear power plant. The processing time for operating licensing is 1 year. This period may be extended to 2 years if the complexity of the project justifies it or if the project proponent requests it.[60]

Operating licence renewals

Canada and United States

In Canada, the Canadian Nuclear Safety Commission issues operating licences for a typical period of 10 years. Since 2016, most licences have been renewed for a period of 10 years.[61] A recent exception includes a 20-year operating licence granted in September 2025 for the Darlington Nuclear Generating Station. Although expended times have increased gradually from 1978 to 2021, the average time expended has been 0.6 years. (See Chart 6.) In recent years, the Canadian Nuclear Safety Commission has recommended that applications for licence renewal be submitted 18 months before a renewal hearing. This is considerably less than the expended time for operating licence renewals in the United States, where the average from 1998 to 2018 was 2.7 years—but there is a caveat.

In the U.S., operating licences are issued for 40 years followed by a renewal that is valid for 20 years.[62] Like most countries, Canada's 10-year validity period is based off the international standard length of periodic safety reviews provided by the International Atomic Energy Agency.[63] This period is half the length of its American equivalent. As such, over the life of a nuclear power plant, renewal frequency is higher in Canada. The issuance of operating licence renewals in Canada is based on the Canadian Nuclear Safety Commission's regulations (i.e., REGDOC-1.1.3).[64] In the United States, operating licence renewals are issued based on regulations in 10 CFR Part 51 and Part 54.[65]

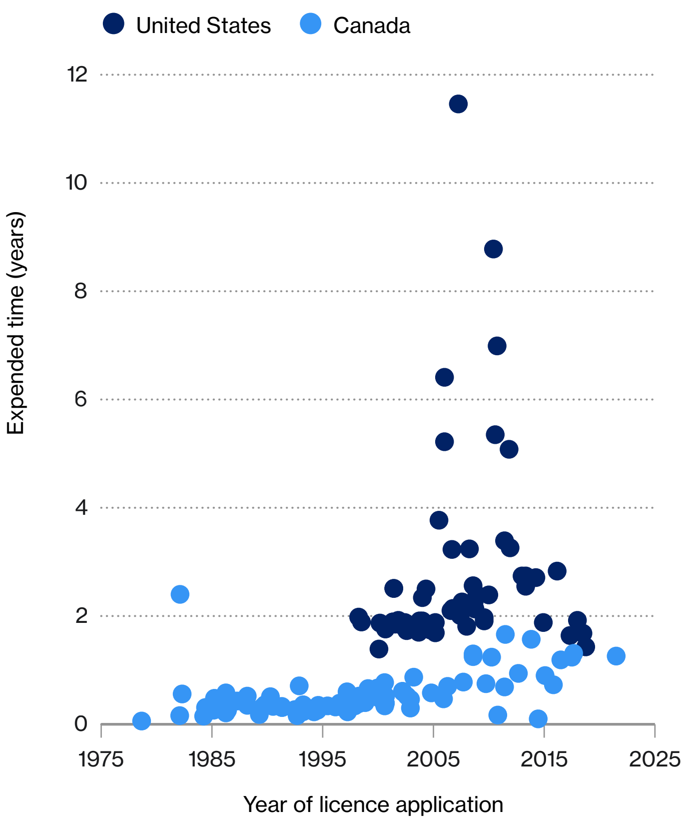
60 Government of France, Environmental Code.
61 Based on communications with the Canadian Nuclear Safety Commission.
62 U.S. Nuclear Regulatory Commission, "Backgrounder."
63 International Atomic Energy Agency, *IAEA Safety Standards*.
64 Canadian Nuclear Safety Commission, "REGDOC-1.1.3."
65 U.S. National Archives, "Part 50—Domestic Licensing"; and U.S. Nuclear Regulatory Commission, "Part 54 - Requirements for Renewal."

Canada and France

Similar to Canada, French operating licences for nuclear plants undergo a mandatory safety review period every 10 years. The project proponent must prove that the power plant is upgraded to best practices equal to the requirements for new build applications.[66] These safety reviews have no mandatory timeframe for completion. Rather, the project proponent and regulator agree on a schedule for completing the review.[67] These reviews supplement continuous monitoring completed by the Authority for Nuclear Safety and Radiation Protection and other regulatory stakeholders.

Chart 6

Expended time for operating licence renewals in the United States is higher than Canada
(number of years)



Note: Canadian data is based on 85 operating licence renewal applications.
U.S data is based on 62 operating licence renewal applications.
Sources: Nuclear Energy Institute; Canadian Nuclear Safety Commission; Signal49 Research.

66 Government of France, Environmental Code.
67 Government of France.

Nuclear licensing timelines: A comparison

Canada's evolving licensing process

Historically, Canada has had a relatively efficient regulatory process for licensing nuclear power plants compared to the United States and France. However, data on construction licensing in Canada is limited. Using data from Gentilly-2, Darlington-1, and the Darlington New Nuclear SMR Project, the average expended time to obtain a construction licence for these projects was 2 years, which is within the standard provided by the Canadian Nuclear Safety Commission. For operating licensing, the average expended time for 11 nuclear projects was less than 1 year, making the expended time of licensing, excluding site licensing and environmental assessments, at 3 years. This timeline is exemplified by the licensing of the Darlington-1 reactor in the late 1970s (See Exhibit 1). Darlington-1 took 3.2 years to receive a construction licence and only 4 months to obtain an operating licence, notably without undergoing a formal environmental assessment.

Today, nuclear projects are subject to an impact assessment process, which includes an environmental assessment outlined by the Impact Assessment Agency of Canada; the historically short licensing timeframes of the 1970s would not be feasible in today's regulatory context. This change is illustrated in Exhibit 1, which contrasts the Darlington-1 licensing timeline with a hypothetical project using the expected timelines outlined by the Impact Assessment Agency and the Canadian Nuclear Safety Commission. For this hypothetical project, an impact assessment (including a site licence) is expected to take 3 years, construction licensing 2.7 years, and operating licensing 2 years, for a total of 7.7 years. (See Exhibit 1.) These timelines reflect the baseline for nuclear regulatory efficiency in Canada prior to additional reforms that are anticipated in the future. (See the section "Regulatory Innovations.")

United States' licensing frameworks

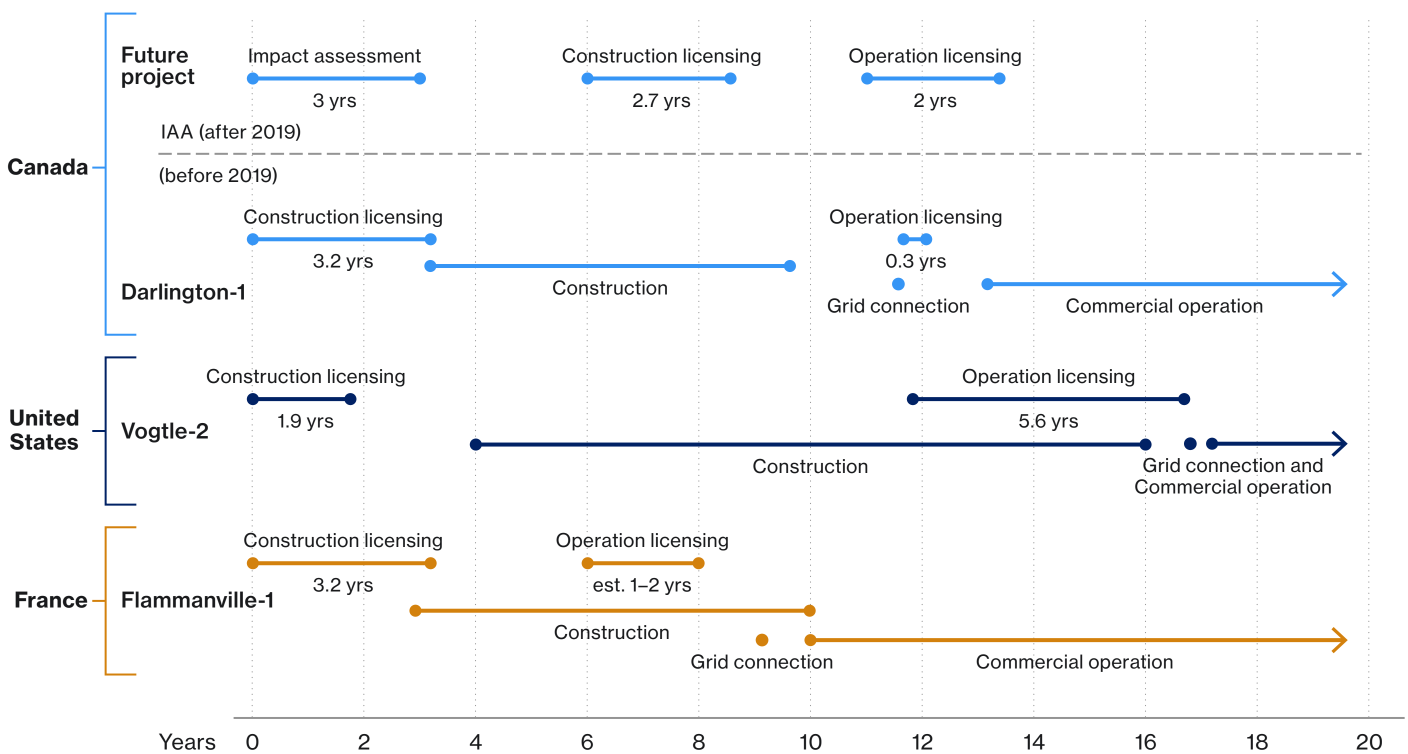
Historically, under 10 CFR Part 50, the average expended time to obtain a construction licence has been about 2 years and 6 years for an operating licence, for a total of 8 years. To illustrate, we use the licensing timeline for the Vogtle-2 reactor which, similar to Darlington-1, began the licensing process in the 1970s. Vogtle-2 received its construction licence in 1.9 years and operating licence in 5.6 years. (See Exhibit 1.) Notably, environmental assessments are embedded within these licensing steps and conducted as part of the overall regulatory review.

France's streamlined process

Compared to Canada and the United States, France has had the fastest nuclear licensing timelines and continues to maintain this efficiency. Between the 1970s and early 2000s, the average time to obtain a construction licence was 3 years, consistent with the 3- to 5-year timeframe outlined by the Authority for Nuclear Safety and Radiation Protection. For operating licensing, the standard is 1 to 2 years, bringing the total licensing timeline to between 4 and 7 years. Like the United States, in France, environmental assessments are integrated into the construction and operating licensing processes, rather than treated as separate procedural requirements. The Flamanville-1 nuclear project illustrates these timelines. (See Exhibit 1.)

Exhibit 1

Representative timeline for the licensing of nuclear power plants in the United States, Canada, and France



Sources: U.S. Nuclear Regulatory Commission; Official Journal of the French Republic; Canadian Nuclear Safety Commission; International Atomic Energy Agency; Signal49 Research.

Regulatory innovations

Canada: Getting the ball rolling

The Government of Canada has proposed measures that will make the Canadian Nuclear Safety Commission the single authority for conducting impact assessments for designated nuclear projects.[68] Depending on whether these reforms are enacted, the timelines for impact assessments, including the issuance of a site licence, could be reduced materially from the current timeframe of 3 years. Other sector-specific reforms from the federal government's review of legislative and regulatory frameworks for nuclear energy are anticipated. As such, Canada's regulatory efficiency for nuclear energy may become more competitive in the near future.

Prior to these recent proposed measures, the Commission had taken incremental steps to improve regulatory efficiency through various initiatives. Notably, "REGDOC-3.5.4, Pre-Licensing Review of a Vendor's Reactor" offers vendors and project proponents the opportunity to engage in an optional pre-licensing vendor design review. Early interaction with the Commission prior to formal licensing would help identify and address regulatory issues earlier in the process. The Commission has also developed licence application guides and other REGDOCs to help project proponents navigate its regulatory framework more effectively. Furthermore, to foster knowledge-sharing and international alignment, the Commission has signed a memorandum of cooperation with counterparts like the Office for Nuclear Regulation in the United Kingdom and the Nuclear Regulatory Commission in the United States.

United States: Embracing wholesale change

Fiscal Responsibility Act

Innovations to bolster nuclear regulatory efficiency have been gaining momentum in the U.S. In June 2023, the *Fiscal Responsibility Act* came into law. It included transformative regulatory reforms for energy projects subject to federal jurisdiction, including nuclear energy.[69] In essence, the *Fiscal Responsibility Act* makes reforms to the *National Environmental Policy Act* that are of consequence to regulatory efficiency. Four elements of these reforms that are relevant to nuclear energy are underscored in this paper.

First, the *Fiscal Responsibility Act* mandates the establishment of a lead agency responsible for supervising environmental assessments and coordinating with relevant federal, state, and tribal agencies. This confines proponent interaction with one responsible agency and can facilitate streamlined coordination between relevant regulatory entities.

Second, the Act limits environmental assessments and the completion of environmental impact statements by the lead regulatory authority to 1 year and 2 years, respectively.[70] An environmental assessment is restricted to 75 pages, while an environmental impact statement is limited to 150 to 300 pages.[71] These page lengths are a high-level indication of the person-hours involved in preparing these regulatory documents, while the restrictions of the Act have the potential to reduce the time expended in their preparation.

68 Government of Canada, "Getting Major Projects Built in Canada."

69 U.S. Congress, Fiscal Responsibility Act of 2023.

70 The Fiscal Responsibility Act has provisions for deadline extensions, subject to conditions.

71 For extraordinary cases, the page length of the environmental impact statement can be extended to a maximum of 300 pages. Page length restrictions do not include citations and appendices.

Third, the Act allows analysis from a past environmental impact statement or environmental assessment to be used in current environmental reviews, within a period of 5 years, without the need for additional analysis, subject to conditions.[72] Past environmental reviews beyond 5 years can also be used if they are re-evaluated. The Act also has provisions for categorical exclusions, which occur when the lead regulatory authority or other relevant regulatory agencies determine that a project or related activity "does not significantly affect the quality of the human environment within the meaning of section 102 (c)" (i.e., section 102 (c) of the *National Environmental Policy Act*).

Fourth, the Act mandates that any negative impacts of alternatives must be taken into consideration. For example, for nuclear power plants, this means that the impact of prolonged fossil fuel use would need to be considered if the alternative to a new nuclear power plant were to continue using a gas-fired power plant for energy production.

These measures of the *Fiscal Responsibility Act* can curtail duplicative efforts and reduce the expended time by leveraging past analysis and institutional experience within the regulatory agency, or other agencies relevant to the environmental review.

ADVANCE Act

The *Accelerating Deployment of Versatile Advanced Nuclear for Clean Energy (ADVANCE) Act* of 2024, previously included in the *National Defense Authorization Act* of 2023, was incorporated into the Fire Grants and Safety Act and passed in 2024.[73] The *ADVANCE Act* aims to accelerate the development of generation IV nuclear reactor technologies and keep existing United States nuclear power plants online. A companion bill, the *Atomic Energy Advancement Act*, also aims to reduce licensing fees for advanced nuclear technologies and was passed in February 2024.[74]

The *ADVANCE Act* intends to support the development and deployment of advanced nuclear fuels in the United States and allied countries, restrict enriched uranium imports from Russia and China, and remediate contaminated lands. It includes the following provisions:

- incentives for nuclear technology development and deployment;
- a requirement for the Nuclear Regulatory Commission to develop a process for timely nuclear licensing at brownfield sites and improve its licensing capacity for advanced nuclear fuel;
- authorization for certain foreign entities to receive licences under the *Atomic Energy Act* of 1954.

These provisions could considerably reduce the expended time to deploy nuclear power plants on existing sites in the United States.

72 According to the Fiscal Responsibility Act, one of the factors that can nullify the use of past environmental review documents is the development of "substantial new circumstances or information about the significance of adverse effects that bear on the analysis."

73 U.S. Congress, ADVANCE Act of 2024.

74 U.S. Congress.

Nuclear executive orders

In May 2025, the President of the United States introduced additional regulatory efficiency measures through a series of nuclear-focused executive orders.[75] Executive order 14300 (i.e., Ordering the Reform of the Nuclear Regulatory Commission) is of particular consequence. Among several provisions, this executive order includes “a deadline of no more than 18 months for final decision on an application to construct and operate a new reactor of any type, commencing with the first required step in the regulatory process.”[76]

In addition to safety, health, and environmental considerations, the executive order requires the Nuclear Regulatory Commission to “consider the benefits of increased availability of, and innovation in, nuclear power to our (U.S.) economic and national security.”[77] Furthermore, among broader changes to the Commission’s organizational culture, personnel, and staffing levels, the capacity and function of the Advisory Committee on Reactor Safeguards is to be reduced to the minimum necessary to fulfill statutory obligations. During mandatory public hearings, the presiding officer of the Commission will no longer be required to make environmental findings, as this is not a statutory requirement during hearings.[78] This flexibility allows hearings to be held earlier in the licensing process and is expected to increase efficiency.

The executive orders also direct the Nuclear Regulatory Commission to reconsider the linear no-threshold (LNT) model for radiation exposure, despite the fact that in 2021, the Commission rejected petitions to deviate from this regulatory model.[79] The LNT model has broad international adoption and is the basis for the International Atomic Energy Agency’s radiation safety standards.[80] The executive orders commit the United States to increasing its nuclear capacity from just under 100G We in 2024 to 400 GWe by 2050—exceeding the COP28 declaration to triple global nuclear energy capacity. Other reforms to the Commission’s regulations and guidance documents are expected to take effect in the latter part of 2026.[81]

The cumulative effect of these reforms is expected to yield substantive improvements in regulatory efficiency well beyond the historical average (i.e., 8 years) for securing construction and operating licences. That said, given the Commission’s historical context, there are risks that some of these reforms may be seen to compromise public trust and regulatory independence—thereby increasing litigation by project opponents, which may curtail regulatory efficiency gains.

75 A total of four nuclear-focused executive orders were issued by The White House: “14299 - Deploying Advanced Nuclear Reactor Technologies for National Security”; “14300 - Ordering the Reform of the Nuclear Regulatory Commission”; “14301 - Reforming Nuclear Reactor Testing at the Department of Energy”; and “14302—Reinvigorating the Nuclear Industrial Base.”

76 White House, The, “Ordering the Reform.”

77 White House, The, “Ordering the Reform.”

78 U.S. Nuclear Regulatory Commission, “Increased Flexibility.”

79 White House, The, “Ordering the Reform”; and U.S. Nuclear Regulatory Commission, “Linear No-Threshold Model.”

80 U.S. Nuclear Regulatory Commission.

81 White House, The, “Ordering the Reform.”

France: Accelerating new nuclear

On June 22, 2023, the Government of France passed a draft bill to accelerate procedures related to the construction of new nuclear facilities near existing nuclear sites and the operation of existing facilities (*Nuclear Acceleration Act*). Aside from removing the 50 per cent cap on nuclear's share of electricity production, this Act is designed to expedite the planning and regulatory approvals process for new nuclear power plants that are built on or near existing nuclear sites.[82] It contains bold provisions.

Up to 14 nuclear reactors may be constructed on the condition that applications for authorization are submitted within 20 years of the *Nuclear Acceleration Act* coming into force. These reactors benefit from multiple regulatory exemptions and the provision of resources, including potential sites. For instance, in Article 9 of the Act, developments, installations, and works related to nuclear reactor construction are exempt from all formalities under the town planning code.[83]

The reactors are not subject to urban planning constraints that limit land artificialization and the consumption of natural, agricultural, or forested lands under Article 194 of Law No. 2021-1104.[84] If the reactors meet certain conditions, they can also be deemed as an "imperative reason of overriding public interest." This exempts them from prohibitions on protected species and their habitats.[85] Furthermore, under the French Expropriation for Public Utility Code, the Act makes potential nuclear sites readily available for the licence holder through provisions of Article 15.

Expectations for regulatory efficiency are high. The French Energy Transition Ministry expects that the Act will reduce construction times by at least 2 years.[86]

82 Nuclear power plants are categorized as basic nuclear installations (BNI) in the French regulatory framework. BNI is an umbrella term that includes nuclear reactors, radioactive waste disposal facilities, and research reactors.

83 Lovells, "A new law."

84 Law No. 2021-1104 is the 2021 French law on the fight against climate change and strengthening resilience to its effects.

85 Lovells, "A new law."

86 Basso, "France to speed up."

Reflections from Canada

With the United States limiting timelines for environmental impact statements to 2 years and construction and operating licences to 18 months, there is a new standard. It is prudent for Canada to examine its options to reduce timelines without compromising safety, public engagement, and Indigenous consultations. Rethinking our use of regulations for existing nuclear sites holds promise. The use of existing sites will be instrumental to nuclear deployment, especially in the short term.

Reaching for new markets

An expended time up to 7.7 years to obtain the required nuclear licences may challenge Canada's ability to compete in securing investments for its domestic industry and realizing technology exports in international markets. The ability of a jurisdiction to export nuclear reactors is strongly related to the health of its domestic nuclear energy industry. Without deployment at scale in Canada as well as safe operational experience, confidence and interest in new Canadian reactor technologies may become limited.

Building nuclear westward

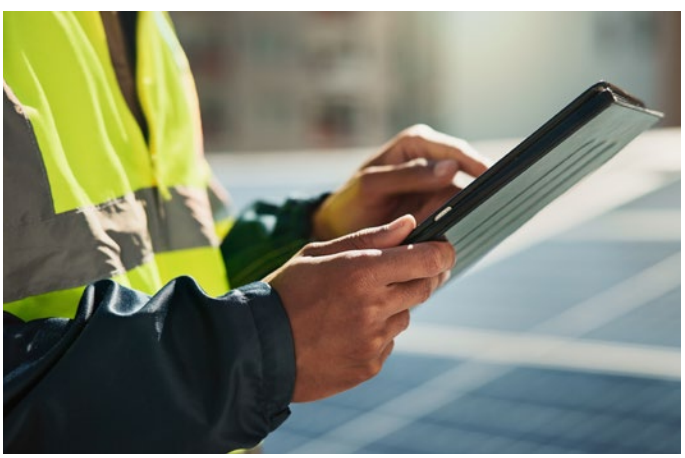
Without regulatory innovations, the time expended in securing licences for nuclear reactors at new sites, and in new jurisdictions with no experience with nuclear plants, will likely be higher. Saskatchewan and Alberta exemplify this point. Aside from the requirement for new sites, these two provinces are also more likely than most jurisdictions in Canada to use nuclear reactors for non-electricity applications in heavy industries like mining, oilsands, and petrochemicals. These applications may require advanced generation IV nuclear technologies to meet thermal energy demands (e.g., high temperature, zero-emissions steam). Licensing for novel applications of nuclear energy in Canada, with technologies where the regulator has no previous experience, has greater uncertainty and a higher likelihood of prolonged regulatory timelines. It is noteworthy that the United States issued the construction licence for Terra Power's subsidiary, U.S. SFR Owner, for its advanced sodium-cooled reactor, under 10 CFR Part 50, in 2 years.

Raising Canada's game

Bolstering regulatory efficiency cannot come at the expense of Canada's safety standards and regulatory independence, which have translated into an admirable safety and security record on nuclear. For instance, Canada is ranked third globally on the protection of nuclear power plants and facilities against sabotage—ahead of the United States and France, which rank 15th and 20th, respectively.[87] We offer some recommendations below.

Reinstate the leadership of the Canadian Nuclear Safety Commission

Simplicity breeds efficiency. Having a single life cycle nuclear regulator, including for impact assessments, reduces the number of moving parts. Nuclear has unique regulatory requirements domestically and internationally. The expertise and institutional capacity of the Canadian Nuclear Safety Commission are best placed to address these unique requirements, and its leadership could extend to impact assessments. With singular institutional leadership, the current impact assessment and licensing process stands to benefit from a reduction of duplicative activities. What is more, there is a reduced effort to manage communications and coordination between the Impact Assessment Agency of Canada and Canadian Nuclear Safety Commission when one institution leads.



Embrace digital disclosures

There's room for improvement when it comes to Canada's regulatory efficiency data for nuclear energy. Data deficits are especially acute for historical records beyond the year 2000. The U.S. Nuclear Regulatory Commission's ADAMS database stand outs as a public disclosure benchmark for nuclear regulatory and licensing data. Canada should disclose licensing data comprehensively, for a digital age.

It could strengthen its data disclosures on licensing such that extensive, complete, and readily available data is available to the public through digital channels. Developing a publicly available nuclear licensing data portal can help.

Adopt digital technologies

Canada can also look at using digital technologies to accelerate impact and environmental assessment reviews, licensing application reviews, and communications with both project proponents and the public. Digital technologies can be leveraged to allow proponents to monitor the progress of their application and make edits as required on different technology platforms.[88] Digital tools can allow proponents to upload and display complex data such as animations, three-dimensional renderings, and geographical information system displays. These digital tools can be used to centralize information and enhance coordination and collaboration with other government regulatory agencies relevant to licensing reviews.[89] This has the potential to reduce the expended time. Of course, the cybersecurity of these digital technologies will need to be fit-for-purpose.

87 Nuclear Threat Initiative, "NTI Nuclear Security Index."
88 U.S. Congress, Fiscal Responsibility Act of 2023.
89 U.S. Congress.

Build a talent pool

As Canada seeks to help triple global nuclear capacity by 2050, building a talent pool of regulators will be important. Also, with more Canadians retiring from the nuclear workforce than those entering it, passing on the experience and institutional memory of one generation of nuclear regulators to another is vital. Learning from the U.S. experience in the 1960s, waiting for the nuclear renaissance to take off may be too late.

On the demand side, recent trends are encouraging. The Canadian Nuclear Safety Commission increased the number of nuclear regulators by 12 per cent from fiscal year 2022–33 to 2024–25.[90] The supply side paints a different picture. According to a March 2023 letter from nuclear industry leaders to education ministers, Canada is facing a shortfall in the number of engineering graduates, specifically women graduates.[91] Canada needs a talent development plan for nuclear regulation, with an emphasis on addressing supply-side issues.

Deepen community engagement

Canada has an extensive Indigenous and public consultation process as part of nuclear licensing. However, public participation is often skewed toward the regulatory review phase of projects. Community awareness and understanding of plant operations and impacts tends to be heightened during this period, only to dissipate before long. This can stunt the trust and credibility that proponents build with surrounding communities. To foster trust and long-term community engagement with nuclear projects, the use of local information committees, as they exist in France, is worthy of consideration. This is a statutory requirement in France for all nuclear installations.

Canada is navigating seismic economic and geopolitical shifts. Consequently, building Canada has broad consensus. However, the social licence for major projects, including nuclear, cannot be taken for granted. Innovative channels of community engagement will be needed in Canada as it seeks to build new nuclear and other zero-emissions technologies.

Balance efficiency and innovation

Canada's nuclear industry has reached a pivotal point in terms of future reactor design and deployment. How Canada decides to implement new deployment will determine the next generation of nuclear technologies that will power the net-zero economy. Deployment strategies for nuclear have consequences for regulatory efficiency. The contrasting approaches of the United States and France to reactor deployment offer a cautionary tale. Canada must strike a delicate balance.

On one hand, a standardized reactor design that can be deployed in fleets would allow for greater regulatory efficiency. With common supply chains, original equipment manufacturers, and repetitive licensing reviews for the regulator, regulatory and manufacturing efficiency is poised to increase.

On the other hand, advanced innovation and the exploration of different reactor technologies is crucial to remain competitive and realize the utility of nuclear in new applications (e.g., in heavy industry). But going too far will decrease regulatory efficiency. Non-electricity applications of nuclear tend to involve advanced reactors, an area where the Canadian Nuclear Safety Commission has no prior licensing experience.

90 Canadian Nuclear Safety Commission, "Annual Report 2024–2025."

91 Canadian Nuclear Safety Commission, "Canada needs more engineering grads."

Appendix A

Methodology

The methodology used in this impact paper involved two key elements: a comprehensive environmental scan and a data analysis.

Environmental scan

We first carried out an environmental scan of the specific policies and statutes governing the development of nuclear power plants in the three comparator countries (i.e., Canada, United States, and France). This involved reviewing the regulatory licensing process for nuclear power plants in all three countries. We also reviewed the historical evolution in the regulatory landscape along with the key institutions involved. Finally, we examined regulatory efficiency innovations enacted or proposed in recent years in the three countries.

We examined 113 articles from academic and grey literature, including reports from nuclear regulators, government departments, electric utilities, industry associations, and international policy and standard-setting organizations. We used a combination of key words to select articles:

- nuclear energy regulatory licences
- nuclear energy regulators
- nuclear energy regulatory process
- nuclear energy regulatory efficiency
- nuclear energy permitting reform
- international standards for nuclear regulations
- nuclear energy regulatory evolution
- nuclear licence approval timelines
- nuclear licensing timelines and regulations

Peer country selection

The United States and France were selected as comparators for three main reasons.

First, the U.S. and France are the largest producers of electricity from nuclear energy in North America and Europe, respectively. They are also the dominant market leaders in their respective regions and offer a best-in-class benchmark for Canada.

Second, similar to Canada, both the U.S. and France have innovation and development capabilities across the entire life cycle of nuclear reactor technologies.

Third, with some exceptions, both countries have a long history of safe nuclear reactor operation and are contracting parties to the Vienna Convention on Nuclear Safety. They also have nuclear regulatory authorities that are comparable to the capacity, capability, and institutional maturity of Canada's nuclear regulator.

Data analysis of nuclear energy licences

Recent and historical licensing data and information for nuclear power plants in Canada and the other two countries were collected. This dataset allowed us to calculate the expended time for nuclear licence regulatory approval. The expended time is the difference between the licence approval date and the licence submission date. Nuclear power construction and operating licences, including operating licence renewals, were the focus of the analysis on expended time.

Historical data collection in Canada involved submitting an access to information and privacy request to the federal government. More recent licensing information was collected from the website of the Canadian Nuclear Safety Commission. Nuclear energy licensing information for the United States and France were collected from the U.S. Nuclear Regulatory Commission's ADAMS database and the official journal of the French government.

In Canada, complete historical data on construction licences is limited. We reviewed three construction licence applications, as well as 10 operating licence applications and 85 operating licence renewal applications. Canadian operating licence applications were adjusted to the mid-month. The original data from the Canadian Nuclear Safety Commission only provided the month of the application.

For the United States, we reviewed 55 construction licences under CFR Part 50, seven combined construction and operating licences under CFR Part 52, 79 operating licences under CFR Part 50, and 62 operating licence renewals.

For France, we reviewed 57 applications to construct new nuclear reactors.

For the conversion of euros and U.S. dollars to Canadian dollars, the following exchange rates were used: CAN$1.60 to 1 Euro and CAN$1.36 to 1 USD.

Appendix B

Regulatory processes

Canada's nuclear regulatory process

The Canadian regulatory process for licensing a nuclear power plant is twofold. It starts with an impact assessment by the Impact Assessment Agency of Canada, followed by a site preparation licence by the Canadian Nuclear Safety Commission. After approval, the Commission reviews and issues the construction and operating licences in accordance with their REGDOCs.[1]

Details of these processes are outlined in Exhibits 1, 2, and 3.

1 Canadian Nuclear Safety Commission, "REGDOC-1.1.3"; "REGDOC-1.1.2"; "REGDOC-1.1.1"; "REGDOC-2.3.1"; "REGDOC-2.3.2"; "REGDOC-2.3.3"; "REGDOC-2.4.1"; "REGDOC-2.4.2"; "REGDOC-2.9.1"; "REGDOC-2.10.1"; "REGDOC-3.1.1"; and "REGDOC-3.5.3."

Exhibit 1

Summary of the Canadian regulatory process to complete an impact assessment for a nuclear power plant

Responsibility	Licensing step
Project proponent	Submission of the initial project description to Impact Assessment Agency of Canada
Impact Assessment Agency of Canada	Consultation with Indigenous groups, the public, and federal departments to develop the following: • Public Participation Plan • Indigenous Engagement and Partnership Plan • Impact Assessment Cooperation Plan • Permitting Plan • Tailored Impact Statement Guidelines
Project proponent	Development and submission of the Impact Statement in accordance with the Tailored Impact Statement Guidelines to Impact Assessment Agency of Canada
Impact Assessment Agency of Canada	• Review of project proponent's impact statement • Engagement on the impact statement with federal authorities, Canadian Nuclear Safety Commission, Indigenous groups, and the public • Development and establishment of the review panel's terms of reference • Decision on whether the project proponent's impact statement meets the Tailored Impact Statement Guidelines
Review panel	• Crown consultation of Indigenous groups and implementation of the Indigenous Engagement and Partnership Plan • Review of impact statement • Receipt of advice, analysis, and results from federal authorities' review of the impact statement • Receipt of advice from independent, non-government entities where expertise is unavailable from federal departments or other government agencies • Preparation and submission of an Impact Assessment Report to the Minister • Preparation and submission of a Consultation Report that documents the outcomes of the Crown consultation process to the Minister
Minister(s)	Referral to the Governor in Council in consultation with the Minister of Natural Resources
Governor in Council	Determination as to whether there are any adverse effects within federal jurisdictions or to the public, and whether the Crown duty to consult and accommodate Indigenous peoples has been fulfilled
Minister(s)	Issuance of the Decision Statement to the project Poponent and the Canadian Nuclear Safety Commission

Sources: Impact Assessment Agency of Canada, "Impact assessment 101"; Signal49 Research..

Exhibit 2

Summary of the Canadian regulatory process to obtain a construction licence for a nuclear power plant

Responsibility	Licensing step
Project proponent	Submission of licence application in accordance with: • REGDOC 1.1.2, License Application Guide: Licence to Construct a Nuclear Power Plant, addressing: - safety and control measures - information on site preparation - vendor designs - facility construction - fuel-out commissioning - project scope and schedule • REGDOC 2.3.1, Conduct of Licensed Activities: Construction and Commissioning Programs, addressing: - management and organization - readiness review - construction and commissioning program - turnover of work - configuration control
Canadian Nuclear Safety Commission	• Review and assessment of application and associated documents • Licence recommendation to the Commission
Canadian Nuclear Safety Commission	• Decision stating the licensing term, conditions, and reasons for the decision • Communication of the Commission's decision to the project proponent and recording the decision in the public record

Sources: Canadian Nuclear Safety Commission; Signal49 Research.

Exhibit 3
Summary of Canadian regulatory process to obtain an operating licence for a nuclear power plant

Responsibility	Licensing step
Project proponent	Submission of licence application in accordance with REGDOC-1.1.3, specifically Appendix B (Safety and Control Areas) and Appendix C (Regulatory Documents and Standards) focusing on: • Management - public information and disclosure program - systems, programs, and policies - operating experience - Human resource capabilities, training, and certification - financial guarantees • Safety - Safety culture and security - REGDOC-2.4.1 Deterministic Safety Analysis - REGDOC 2.4.2, Probabilistic Safety Assessment - REGDOC 2.3.2, Accident Management - REGDOC-2.10.1, Nuclear Emergency Preparedness and Response • Environment - REGDOC-2.9.1, Environmental Protection: Environmental Principles, Assessments and Protection Measures - waste management - facilities and equipment - physical design - maintenance - Decommissioning Plan
Canadian Nuclear Safety Commission	• Review and assessment of application and associated documents • Consultation with Indigenous groups, government departments, and the public • Licence recommendation to the Commission
Canadian Nuclear Safety Commission	• Decision stating the licensing term, conditions, and reasons for the decision • Communication of the Commission's decision to the project proponent and recording the decision in the public record

Sources: Canadian Nuclear Safety Commission; Signal49 Research.

The United States' nuclear regulatory process

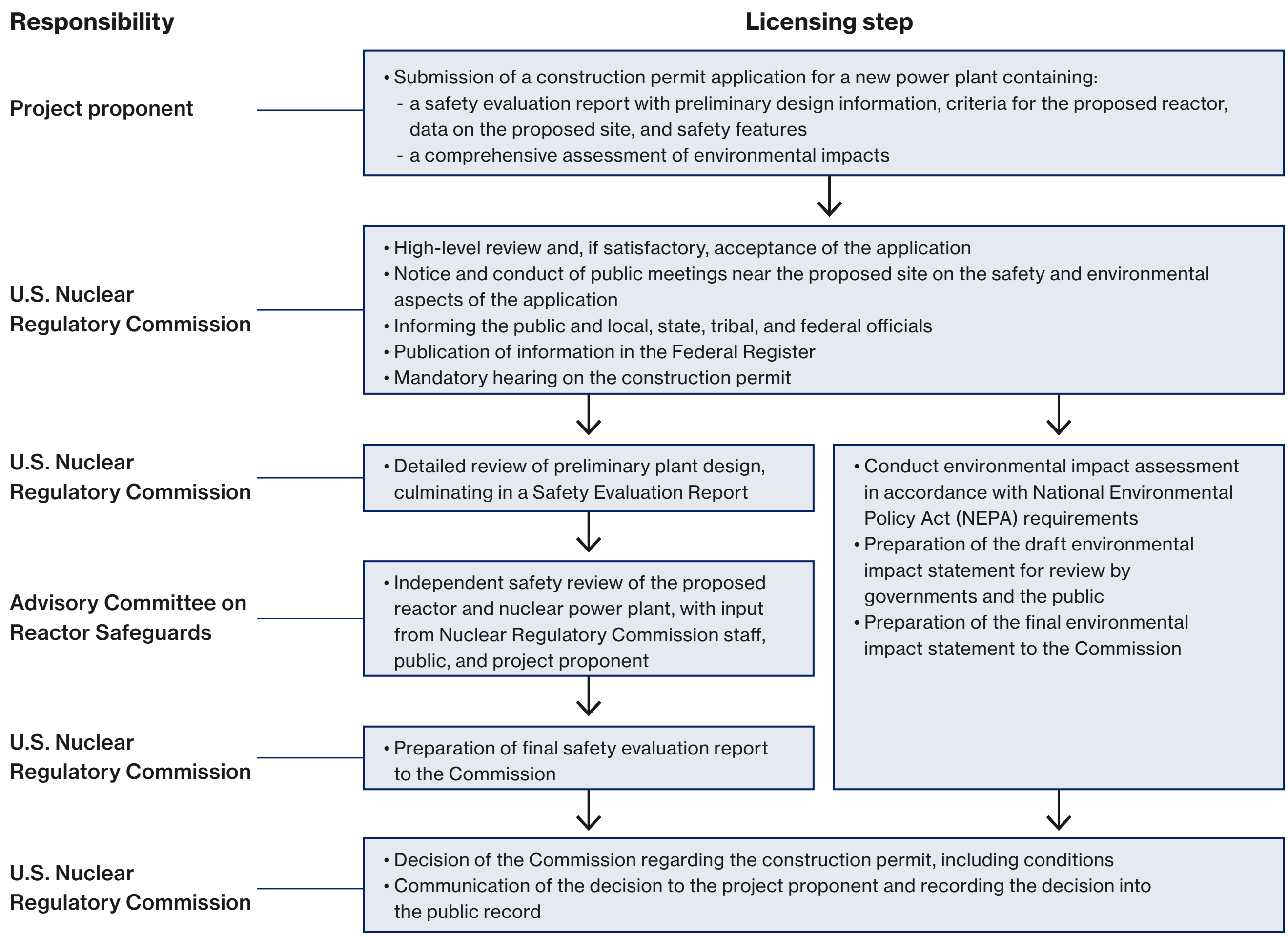
The United States' regulatory process for licensing a nuclear power plant can be done by one of two ways:

1. Under 10 CFR Part 50, which has separate and sequential processes for obtaining a construction licence and an operating licence, or
2. Under 10 CFR Part 52, which is a combined licensing process[2]

Details of these process are outlined in Exhibits 4, 5, and 6.

Exhibit 4

Summary of the U.S. regulatory process to obtain a construction license for a nuclear power plant under Title 10 of the Code of Federal Regulations, Part 50.



Note: After NEPA findings and confirmation of site suitability, the U.S. Nuclear Regulatory Commission may issue a limited work authorization that excludes any nuclear safety-related activities.
Sources: U.S. National Archives, "Part 50 – Domestic Licensing"; Signal49 Research.

2 U.S. National Archives,, "Part 50 – Domestic Licensing"; and "Part 52 – Licenses, Certifications, and Approvals."

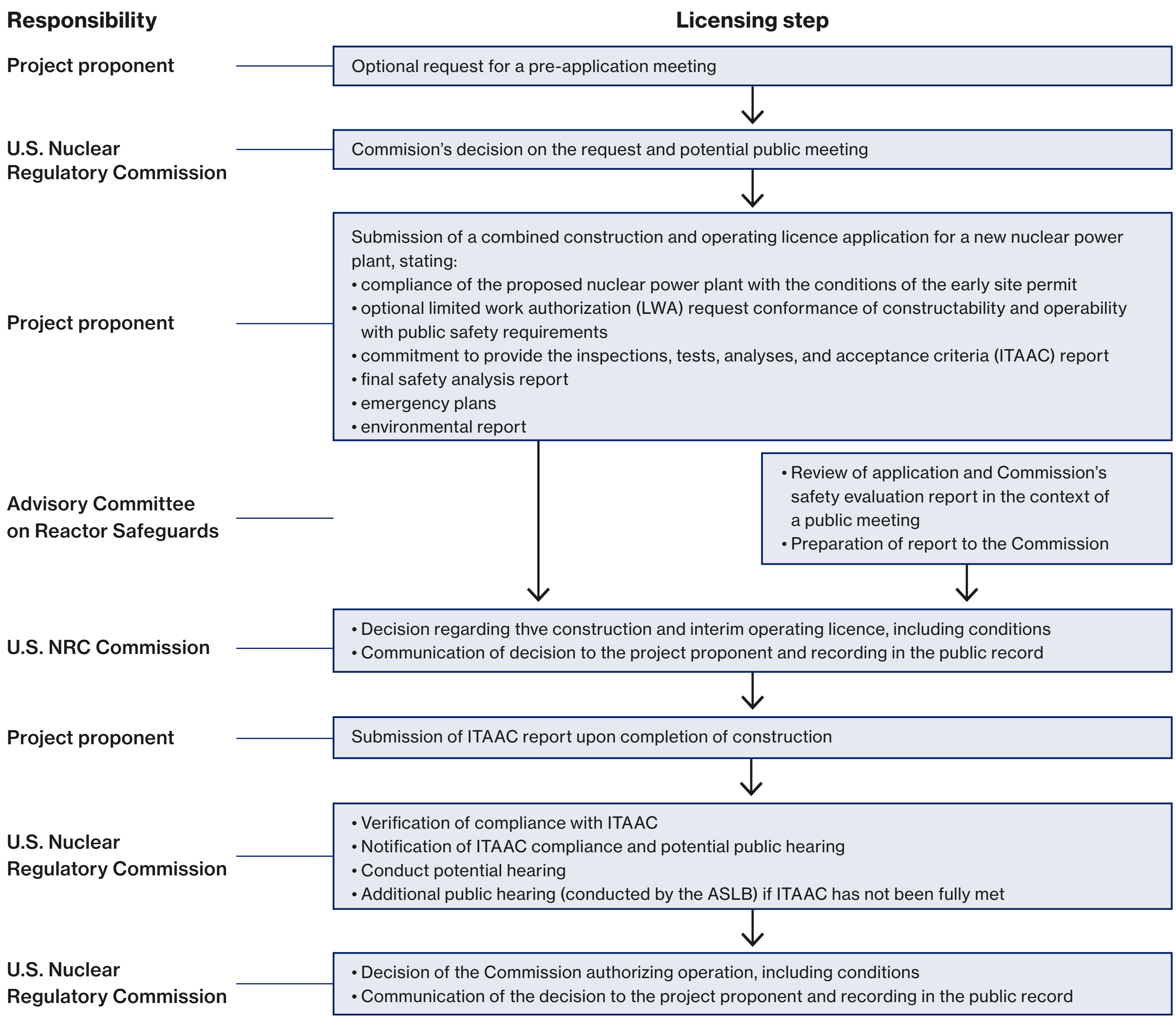
Exhibit 5

Summary of the U.S. regulatory process to obtain an operating licence for a nuclear power plant under Title 10 of the Code of Federal Regulations, Part 50

Responsibility	Licensing step
Project proponent	Submission (prior to the completion of construction) of the licence to operate the nuclear power plant, containing: • a final safety evaluation report, including the final plant design, safety evaluation, operational limits, training, anticipated response to accidents, physical security, and plans for coping with emergencies • an updated environmental report
U.S. Nuclear Regulatory Commission	• Review that construction has occurred within the terms of the construction permit • Confirmation that the plant can be operated in compliance with the Commission's regulations on health and safety • Confirmation that the project proponent has the required technical and financial qualifications • Preparation of an updated environmental impact statement compliant with the National Environmental Policy Act (NEPA) • Review and confirmation of emergency plans, in consultation with the Federal Emergency Management Agency (FEMA) • Publication of Federal Register Notice enabling requests for a public hearing • The Commission or the Atomic Safety and Licensing Board (ASLB) may hold a hearing if requested by members of the public
Advisory Committee on Reactor Safeguards	• Review of operating licence application • Review of the Commission's final safety evaluation report
U.S. Nuclear Regulatory Commission	Preparation of final safety evaluation report to the Commission
U.S. Nuclear Regulatory Commission	• Decision of the Commission regarding the operating licence, including conditions • Communication of the decision to the project proponent and recording the decision into the public record

Sources: U.S. National Archives, "Part 50 – Domestic Licensing"; Signal49 Research.

Exhibit 6
Summary of the U.S. regulatory process to obtain a combined construction and operating licence for a nuclear power plant under Title 10 of the Code of Federal Regulations, Part 52



Sources: U.S. National Archives, "Part – 52 Licenses, Certifications and Approvals"; Signal49 Research.

France’s nuclear regulatory process

The French regulatory process for licensing a nuclear power plant starts with the process to obtain an authorization decree to begin construction of the facility. Then, the process to obtain an operating licence, also called a commissioning licence, follows.[3]

Details of these processes are outlined in Exhibits 7 and 8.

Exhibit 7

Summary of the French regulatory process to obtain an authorization decree for the construction of a nuclear power plant

Responsibility	Licensing step
French Government’s Executive Branch	An application for an authorization decree to create a basic nuclear installation is filed with the Minister responsible for nuclear safety by the project proponent
Project proponent	The project proponent sends the Authority for Nuclear Safety and Radiation Protection a copy of its request accompanied by a file, including the following: • Poperator information • project technical description and operation description • construction information • site information • Impact study • rafety report • Risk control study • technical and financial capabilities of the operator • dismantling plan
French Government’s Executive Branch	The Minister responsible for nuclear safety sends the application for authorization and the accompanying file to the prefect responsible for organizing the local consultations and public inquiry
Regional prefect	• The prefect sends the application for authorization accompanied by its file to the environmental authority, local water commission, local authorities, and the municipalities affected by the project • The prefect submits the application for authorization and the accompanying file to the public inquiry • The prefect sends the Minister responsible for nuclear safety and the Authority the results of the consultations carried out
French Government’s Executive Branch	• The Minister responsible for nuclear safety submits a preliminary authorization decree to the Authority and the project proponent • The creation authorization is granted by the Minister responsible for nuclear safety • The authorization decree and the opinion of the Authority are published in the Official Journal of the French Republic • The Minister responsible for nuclear safety notifies the project proponent of the authorization decree

Sources: Government of France, Environmental Code, Chapter III: Basic nuclear installations (Articles R593-1 to R593-123); Signal49 Research.

3 Government of France, Environmental Code.

Exhibit 8

Summary of the French regulatory process to obtain an operating licence for a nuclear power plant

Responsibility	Licensing step
Project proponent	The project proponent sends a file to the Authority for Nuclear Safety and Radiation Protection, including the following: • safety report • general operating rules • internal emergency plan • updated dismantling plan, if applicable • updated impact study, if applicable • updated risk control study, if applicable
Authority for Nuclear Safety and Radiation Protection	• After having verified that the installation complies with the objectives and rules, the Authority authorizes the commissioning of the power plant • The authorization decision is mentioned in the Authority's official bulletin • The Authority notifies its decision to the project proponent and communicates it to the Minister responsible for nuclear safety, the prefect, and the local information commission • The decision authorizing commissioning sets the deadline within which the project proponent must submit to the Authority a file detailing the start-up of the power plant, including: - a summary report on the installation start-up tests - a review of the operating experience acquired

Sources: Government of France, Environmental Code, Chapter III: Basic nuclear installations (Articles R593-1 to R593-123); Signal49 Research.

Appendix C

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Acknowledgements

Babatunde Olateju, Director, PhD, developed this research project and led its execution. Shah Nawaz Ahmad, Research Associate, PhD, provided research support. Leslie Twilley, Chief Research Officer, PhD, Stefan Fournier, Executive Director, MA, and Jamie Peters, Lead Research Associate, PhD, provided feedback on this impact paper. This impact paper was designed by Natasha Delrosario, Graphic Designer.

We extend our gratitude to the Research Advisory Board (RAB) for its review and input. RAB members include:

- **Akira Tokuhiro**, Professor, Department of Energy and Nuclear Engineering, Ontario Tech University
- **Diane Cameron**, Head of Division, Nuclear Technology Development and Economics, OECD Nuclear Energy Agency
- **Colin Moses**, Vice President and Chief Communications Officer, Canadian Nuclear Safety Commission
- **Steve Short**, Independent Nuclear Energy Regulatory Expert

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To cite this research: Olateju, Babatunde, and Shah Nawaz Ahmad. *Time to Build: Nuclear Energy Regulatory Efficiency in Canada, United States, and France.* Ottawa: Signal49 Research, 2026.

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PUBLICATION P-02154-J2P7D4
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