2. Nuclear

Draft New York State Energy Plan

July 2025

Key Findings

- **The State should evaluate the extension of the Zero Emission Credit (ZEC) program prior to any federal relicensing application deadlines** to ensure the continued operation of the existing nuclear fleet to help meet State climate goals as well as maintain fuel diversity and fuel security. Any extension should be done with ratepayer protection in mind, in addition to the reliability needs of the grid.
- **Through its Master Plan for Responsible Advanced Nuclear Development (Master Plan), the State should continue to examine key considerations for advanced nuclear for long-term planning.** Advanced nuclear technologies present themselves as a potentially important opportunity to help address the needs of expected load growth, achieve a zero emissions grid, and unlock further economic development opportunities in New York. The State should proceed in the development of the Master Plan, which has been underway since January 2025. The Master Plan process should examine the key issues raised by the January 2025 Blueprint for Consideration of Advanced Nuclear Technologies and develop recommendations for implementation of advanced nuclear technologies in the State.
- **Through its leadership of the First Movers Initiative and other initiatives, the State should continue to pursue multi-state collaborations in moving project development forward.** To achieve economies of scale and de-risk new nuclear development, collaborating with other states can help build out an advanced nuclear reactor order book, supply chains for construction of new reactors, and a trained workforce for construction and plant operations, among others. The State should continue to engage on a multi-state level through the National Association of State Energy Officials (NASEO)/Gateway for Accelerated Innovation in Nuclear (GAIN) First Movers Initiative.
- **Through NYPA's efforts to develop at least 1 gigawatt (GW) of nuclear power generation and other actions, the State should continue to pursue opportunities for early deployment action.** The State's zero emissions by 2040 target is urgent, especially when viewed relative to the long development timelines of nuclear projects. Early development efforts are therefore important. The State is already undertaking examples of such early deployment action through NYPA's role to develop 1 GW of advanced nuclear power generation as per Governor Hochul's direction in June 2025 and NYSERDA's support for an early site permitting funding application by Constellation. Early development efforts should be undertaken in coordination with the Master Plan process and reflecting collaboration with other states to ensure that any deployment commitments leverage the insights and benefits from those initiatives.

Key Terms

- **Light Water Reactors (LWRs):** A term used to describe reactors using ordinary water as a moderated coolant.[1]
- **Small Modular Reactors (SMRs):** Smaller, more advanced, nuclear reactors using either water or non-water coolants and which offer improved sustainability, safety, and proliferation, along with a lower overall investment.
- **Nuclear Generations:** Nuclear technology discussions often refer to "generations" of nuclear designs, with current operating large LWRs referred to as "Gen II" or "Gen III." Newer advanced technologies are categorized as either "Gen III+," defined as large or small modular light water reactors that offer improved economics and safety over conventional large light water reactors, or "Gen IV," defined as small modular reactors or microreactors that use non-water coolants and offer improved sustainability, safety, and proliferation, along with a lower overall investment. Gen IV technologies include high temperature gas reactors, liquid sodium metal reactors, and molten salt reactors.
- **Megawatt Electrical (MWe):** The electric output capability of the nuclear power plant.
- **Decommissioning:** The radiological clean-up and dismantling of a nuclear facility, has four basic aspects: radiological cleanup and removal, fuel storage, non-radiological cleanup and removal, and site restoration.

[1] U.S. Nuclear Regulatory Commission. Glossary. https://www.nrc.gov/reading-rm/basic-ref/glossary.html#S

1. Overview

1.1. Commercial Nuclear Power in New York

There are currently four operating commercial nuclear power plants in New York State – James A. Fitzpatrick, R.E. Ginna, Nine Mile Point Unit 1, and Nine-Mile Point Unit 2. Together, these plants generate 3.3 gigawatts (GW) of electricity, representing 21 percent of New York's total electricity and over 27 million megawatt-hours of emissions-free electricity per year. These upstate New York plants provide 2,100 direct jobs during normal operations, 3,000 supplemental jobs during refueling outages, and have a 25,000 indirect/ancillary/net employment impact.[2] The plants contribute significant economic benefits to their local communities through the tax base, permanent jobs, and the influx of traveling workers during refueling outages.

Regulation and oversight of nuclear power plants primarily rests with the federal government. The U.S. Nuclear Regulatory Commission (NRC) regulates construction, operation, and decommissioning of all commercial nuclear power plants in the United States and has jurisdiction over nuclear safety and security. The Federal Energy Management Agency (FEMA) provides state and local agencies with relevant and executable radiological emergency preparedness planning, training, and exercise guidance. In addition to the federal government, New York State also plays a significant role. NYSERDA serves as the State's nuclear coordinator and central liaison to the NRC; the New York State Department of Public Service (DPS) maintains lightened regulation over the plants; the New York State Department of Environmental Conservation (DEC) is the lead agency for environmental permitting, environmental contamination, and radiological emergency recovery; the New York State Department of Health (DOH) is the lead agency for public health issues and radiological emergency response; the New York State Division of Homeland Security and Emergency Services (DHSES) is the lead agency for emergency preparedness and security; and the New York State Department of State (DOS) administers regulatory review programs for coastal and inland waterways.

1.2. Advanced Nuclear Technologies

While there has been minimal deployment of new nuclear generation over the past decades, both in the U.S. and globally, interest has markedly increased in recent years driven largely by current and expected load growth. Today's nuclear fleet in New York State consists entirely of large light water reactors (LWRs). New nuclear development is predominantly focused on a new generation of advanced nuclear technologies that are characterized by enhanced design, operational, and safety features.

Nuclear technology discussions often refer to "generations" of nuclear designs, with current operating large LWRs referred to as "Gen II" or "Gen III." Newer advanced technologies are categorized as either "Gen III+," defined as large or small modular light water reactors that offer improved economics and safety over conventional large light water reactors, or "Gen IV," defined as small modular reactors or microreactors that use non-water coolants and offer improved sustainability, safety, and proliferation, along with a lower overall investment. Gen IV technologies include high temperature gas reactors, liquid sodium metal reactors, and molten salt reactors. Large-scale reactors produce greater than 300 MW,

[2] Exelon's 2015 Zero Emission Credit Petition to the New York State Public Service Commission

SMRs are typically designed to produce between 51 and 300 MW, and microreactors produce 1 to 50 MW. The small size of SMRs and microreactors may make them suitable for use in remote locations and behind-the-meter applications.

Beyond providing firm electric energy and capacity, advanced nuclear plants have a wide variety of applications, including waste heat that could be used for district heating. Some advanced nuclear reactors, such as high-temperature gas reactors could supply high-quality heat for industries—including chemical manufacturing, steel production, hydrogen production, and other high-energy-demand sectors that are difficult to electrify. Hydrogen production, in particular, is a promising application for all types of advanced nuclear, with one white paper indicating that four different advanced reactor designs could produce hydrogen through high-temperature steam electrolysis.[3]

All nuclear reactors are required to incorporate safety systems that can control the fission reaction in the event of irregular operating conditions, ensure the adequate cooling of fuel, and prevent the release of radioactivity into the environment. Advanced reactors offer the potential for safer designs that incorporate passive safety features to shut the reactor down safely without the need for operators to take manual action after the loss of electrical power or reactor coolant or another malfunction.[4] Rather than relying on human intervention and mechanical pumps and other devices, these systems employ the natural laws of physics to function, using convection and gravity to relieve pressure and lower temperature.

1.3. Planning for Advanced Nuclear in New York

Within the context of expected load growth, decarbonization goals and a continued focus on unlocking economic development opportunities, New York State is in the process of developing a Master Plan for Responsible Advanced Nuclear Development in New York (the “Master Plan”). In January 2025, NYSERDA published a Blueprint for Consideration of Advanced Nuclear Energy Technologies (the “Blueprint”) that sets out the scope of issues to be considered throughout the Master Plan process.[5] The development of the Master Plan will provide a framework for in-depth examination into the key issues raised by the Blueprint and develop recommendations for implementation of advanced nuclear technologies in New York State. In June 2025, Governor Hochul directed the New York Power Authority (NYPA) to develop and construct a zero-emission advanced nuclear power plant in Upstate New York to support a reliable and affordable electric grid. In addition, New York is co-leading the multi-state “First Movers Initiative,” started earlier this year with ten other states to help explore opportunities for cooperation and risk-sharing on advanced nuclear development. These efforts are expanded upon later in this chapter.

[3] D. Bass et al., 2022. “Steam Electrolysis Hydrogen Production with Nuclear Reactor Temperature Capability,” 2022.

[4] U.S. Department of Energy (DOE), *Enhanced Safety of Advanced Reactors*, accessed July 6, 2025, https://www.energy.gov/ne/enhanced-safety-advanced-reactors#:~:text=Passive%20safety%20refers%20to%20the,excess%20heat%20without%20human%20intervention.

[5] NYSERDA, “Blueprint for Consideration of Advanced Nuclear Energy Technologies,” January 2025, https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Programs/Advanced-Nuclear/GEN-advnucbp-r-1-v1-complete.pdf

2. State of the Sector

This section provides an overview of the existing nuclear fleet in New York State and the Zero Emission Credit (ZEC) program that supports the ongoing operation of these facilities. Current regulations pertaining to emergency preparedness, security, plant decommissioning, and waste management at existing nuclear plants are discussed, as well as opportunities for hydrogen production and workforce development to support the existing fleet.

2.1. Existing Nuclear in New York

As an emissions-free source of baseload electric power, New York's current nuclear power plants continue to play an important role both in the ongoing process to decarbonize New York's electricity supply and in maintaining grid stability. New York State's nuclear plants were responsible for 22.2 percent of energy production statewide as reported in November 2024, a drop from 34 percent in 2019 following the closure of the Indian Point nuclear power plant. In addition to diversifying the State's fuel portfolio, these nuclear plants also hold the highest capacity factor (98.1 percent in 2024) when compared to all other power generation in the state.

There are four operating nuclear power plants in New York State today: Nine Mile Point Units 1 and 2, James A. FitzPatrick (FitzPatrick), and R.E. Ginna (Ginna). Table 1 provides a summary of basic information about the plants. Indian Point Unit 1 operated from 1962 until 1974, when it was permanently shut down, and Indian Point Units 2 and 3 operated until 2020 and 2021, respectively.

Table 1: Operating Nuclear Power Plants in New York State

Plant	Operator	Location	Size / Capacity Factor	License Expiration	License Renewal Application Deadline
FitzPatrick	Constellation Energy Generation, LLC	Town of Scriba, Oswego County	831 MWe 96.4%	Oct 2034	Oct 2029
Ginna	Ginna Nuclear Power Plant LLC (Constellation)	Town of Ontario, Wayne County	580 MWe 94.5%	Sept 2029	Sept 2026
Nine Mile Point Unit 1	Nine Mile Point Nuclear Station, LLC (Constellation)	Town of Scriba, Oswego County	621 MWe 91.9%	Aug 2029	Aug 2026
Nine Mile Point Unit 2	Nine Mile Point Nuclear Station, LLC (Constellation)	Town of Scriba, Oswego County	1,272 MWe 98.1%	Oct 2046	Oct 2041

Source: https://www.nei.org/CorporateSite/media/filefolder/resources/fact-sheets/state-fact-sheets/New-York-State-Fact-Sheet.pdf

2.2. Zero Emission Credit Program

New York State supports existing nuclear facilities through the ZEC program. Established in the Order Adopting a Clean Energy Standard in 2016, this program provides a credit to existing nuclear facilities for their zero-emissions environmental attributes to enable their continued operation.[6] The credit, set by the Public Service Commission (PSC), is based on the difference between the social cost of carbon and electricity prices. New York's investor-owned utilities and other energy suppliers (collectively, "Load

[6] CASE 15-E-0302, Order Adopting a Clean Energy Standard (2016).

Serving Entities," or LSEs) must purchase the percentage of ZECs that represents the portion of the electric energy load served by the LSE in that year. LSEs make ZEC purchases by contract with NYSERDA and recover the costs from ratepayers through commodity charges on customer bills. The PSC deemed the ZEC program as the best way for the State to preserve the nuclear facilities' environmental attributes while staying within the State's jurisdictional boundaries. The ZEC program expires in March 2029. Consideration of the future of the ZEC program is underway in the PSC's Clean Energy Standard proceeding, where most recently the PSC has instructed Department of Public Service Staff to submit a White Paper by September 12, 2025, that evaluates how any continuation of the ZEC program should be structured.[7]

2.3. Hydrogen Production

As one example of potential nuclear applications beyond power generation, New York is already demonstrating that nuclear power can produce clean hydrogen. Nine Mile Point Nuclear Station began producing hydrogen in March 2023 as a demonstration project supported by the U.S. Department of Energy (DOE).[8] The hydrogen, produced using a proton exchange membrane electrolyzer, is currently being used within the facility for existing operational needs. Furthermore, NYSERDA awarded a grant to Nine Mile Point to help demonstrate long-duration energy storage using a hydrogen-powered fuel cell.[9] There are a further three nuclear power plants in the United States that are also demonstrating hydrogen production.[10]

2.4. Workforce Development

New York's existing nuclear power plants require a trained workforce across their operational lifecycle. The workforce would need to grow further in case of new advanced nuclear power development, both for construction and operation. University programs are a key component in nuclear workforce development. NYSERDA is supporting federal grant applications by Rensselaer Polytechnic Institute (RPI) for ongoing development of nuclear power operations education, nuclear safety training, and other nuclear workforce development programs in New York. RPI is home to a new reactor operations simulator and digital control room that is unique to universities in the Northeast region.

2.5. Emergency Preparedness

New York State maintains emergency management plans for all hazards and specific plans for radiological hazards; both types of plans are relevant to nuclear power. New York law requires the State to develop a Comprehensive Emergency Management Plan (CEMP) (see NYS Executive Law, Article 2-b, Section 22), which includes a base plan that identifies the all-hazards preparedness, response, and

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[7] CASE 15-E-0302, Order Adopting Clean Energy Standard Biennial Review as Final and Making Other Findings (2025).

[8] DOE, "Nine Mile Point Begins Clean Hydrogen Production," March 7, 2023, https://www.energy.gov/ne/articles/nine-mile-point-begins-clean-hydrogen-production.

[9] NYSERDA, "Governor Hochul Announces $16.6 Million in Awards for Five Long Duration Energy Storage Projects," September 8, 2022, https://www.nyserda.ny.gov/About/Newsroom/2022-Announcements/2022-09-08-Governor-Hochul-Announces-Millions-in-Awards-for-Five-Energy-Storage-Projects.

[10] DOE, "Nine Mile Point Begins Clean Hydrogen Production," March 7, 2023, https://www.energy.gov/ne/articles/nine-mile-point-begins-clean-hydrogen-production#:~:text=Demonstrating%20Clean%20Hydrogen%20Production,System%20at%20Nine%20Mile%20Point.&text=DOE%20supported%20the%20construction%20and,hydrogen%20made%20from%20fossil%20fuels.

recovery activities of the State. The CEMP is supplemented by numerous performance-based, functional, and hazard-specific annexes that provides multi-agency response activities to employ specific functions, respond to risks, and deliver a broad array of capabilities. The CEMP is developed in coordination with agencies that comprise the State Disaster Preparedness Commission. Each of the plans that fall under the CEMP are implemented in a targeted, multi-agency approach that leverages the full capabilities of the State. The CEMP is updated at least once per year and is tested with a greater frequency via exercises and real-world events.

In addition to the all-hazards CEMP, New York State has additional regulations specific to protect its citizens from ionizing radiation. DOH is the designated State agency of primary responsibility for radiation (New York State Public Health Law Sections 201, 206).

NYS Executive Law, Article 2-b outlines State requirements specific to Radiological Emergency Preparedness. The law provides that counties are the first line of defense in handling emergencies subject to an assumption of responsibility by the State pursuant to a State Declaration of Disaster Emergency (see Executive Law, Section 24, McKinney's Consolidated Laws of New York, Volume 18).

FEMA maintains the Radiological Emergency Preparedness (REP) Program Manual, a living, non-binding guidance document for offsite response organizations that incorporates required federal regulatory elements and interprets planning standards and criteria contained in NUREG-0654-FEMA-REP-l: “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Fixed Nuclear Facilities.” The current REP Program Manual is dated December 2023.[11]

New York State Executive Law, Article 2-b, Section 29-c specifically focuses on Radiological Preparedness in the context of State and local disaster preparedness. It requires any NRC licensee of a nuclear electric generating facility to be liable for an annual fee to support state and local governmental responsibilities under accepted radiological emergency preparedness plans related to the facility operated by such licensee. These fees are directed for the purchase, installation, maintenance, and operation of equipment used by State and local governments to monitor and record the potential and actual presence of radioactive materials within the appropriate planning radius from a nuclear electric generating facility; the purchase, storage and distribution by the State of equipment, drugs or other material for the purpose of protecting public health and safety; and for personal service, administrative costs and contractual services. Additionally, the fee provides for emergency services personnel training and supports the development, exercise, and implementation of emergency preparedness and response plans.

Local government planning is based on the principle that all emergencies start and end locally. As such, local planning efforts include a variety of activities specifically designed and implemented to protect citizens from radiation exposure. These activities include establishing reception centers, school reception centers, personnel monitoring centers, evacuation planning methodologies, and a robust (pre-event) public information campaign. These centers and activities are managed through a pre-identified

[11] U.S. Federal Emergency Management Agency (FEMA), “Radiological Emergency Preparedness Program Manual,” April 4 2024, https://www.fema.gov/emergency-managers/practitioners/hazardous-response-capabilities/radiological/rep-program-manual.

command and control structure established at the county-level of government. New York State Executive Law, Article 2-b, Section 23 requires that all counties in the State also possess a CEMP (described above) that includes the basic tenets for how the jurisdiction will prepare for, respond to, and recover from an emergency within their jurisdiction. The number and type of hazard-specific annexes each county's CEMP has varies across the State depending upon their risks and the evolution of their planning programs.

2.6. Security

The cyber and physical security of New York's nuclear power plants are regulated by the NRC. Specifically, Title 10 of the NRC Code of Federal Regulations (10 CFR), Part 73—"Physical Protection of Plants and Materials"—establishes an exhaustive list of standards for physical and cyber security at nuclear plants.

NRC regulations are enforced by four regional offices, with New York falling under the jurisdiction of Region I. Employees from these regional offices conduct oversight of plant security through in-depth, well-documented facility inspections as part of the NRC's Reactor Oversight Process (ROP). The ROP requires inspectors to conduct quarterly plant assessments based on inspection findings and performance indicators. If the NRC finds a nuclear power plant is noncompliant with mandatory standards, it may issue a Notice of Violation to the plant and can impose civil penalties as outlined in Section 234 of the Atomic Energy Act of 1954, as amended.

The NRC completes annual performance assessments and every six months, each plant receives either a mid-cycle review letter or an annual assessment letter along with an NRC inspection plan. The NRC evaluates plant performance by analyzing two distinct inputs: inspection findings from NRC's inspection program and performance indicators reported by the licensee.

2.7. Waste Management

The operation of commercial nuclear power plants results in generation of high-level nuclear waste (e.g., spent nuclear fuel) and low-level radioactive waste. Waste generated by nuclear fission remains radioactive for many years after it is produced, with some elements remaining radioactive for thousands of years. Proper handling, storage, and disposal is critical to ensuring public safety.

Currently, nearly all spent nuclear fuel from New York nuclear plants is managed on-site at the generation facility in the form of solid spent fuel rods stored in deep pools of water for approximately 10 years after generation and then placed in steel-lined concrete casks on the reactor site. While on-site storage is intended to be temporary (the NRC licenses on-site storage in pools and dry casks for 120 years from the plant's initial startup), there are no available permanent disposal sites in the United States, and virtually all nuclear fuel used for electricity generation still sits at the facilities where it was generated. The dry cask model has been successful in preventing waste leakage; the NRC reports that nationwide, dry cask storage has released no radiation that affected the public or contaminated the environment.[12] Yet as dry casks approach their maximum licensing period the risks of their failure

[12] U.S. NRC, "*Backgrounder on Dry Cask Storage of Spent Nuclear Fuel,*" January 2023, https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/dry-cask-storage.html.

increase. The federal government has paid over $7 billion to nuclear utilities and reactor owners in legal settlements for failing to take possession of their fuel waste and therefore requiring owners to continue to store the spent fuel on-site.

Waste remains on-site at more than a hundred reactor sites across the nation, including the four active New York State facilities, the Indian Point decommissioning site, and the Western New York Nuclear Service Center (West Valley), with no pathway for ultimate disposal. Nonetheless, nuclear waste volumes are currently small compared to waste from other industries.

- Nuclear power contributes less than 0.5 percent of the total hazardous waste shipped annually in the United States.[13]
- The U.S. generates 2,000 metric tons of spent nuclear fuel (SNF) per year, less than half the volume of an Olympic-sized swimming pool.[14]
- Since the 1950s, the United States has accumulated 90,000 metric tons of SNF, which could fit on a football field at a depth of less than 10 yards.[15]
- A 1,000-megawatt electrical (MWe) nuclear reactor produces about 3 cubic meters of high-level waste annually, whereas a similarly sized coal plant produces 300,000 metric tons of hazardous coal ash each year.[16]

While DOE is the federal agency with ultimate responsibility for spent fuel disposal, and it has begun a consent-based siting process to identify one or more federal consolidated interim storage facilities for the nation's spent nuclear fuel, it is constructive for New York to continue to advocate for appropriate long-term disposal options for nuclear waste.[17]

2.8. Decommissioning

Decommissioning, the radiological clean-up and dismantling of a nuclear facility, has four basic aspects: radiological cleanup and removal, fuel storage, non-radiological cleanup and removal, and site restoration. Given the complexities that inhere in safely and efficiently decommissioning nuclear reactors, multiple state and federal agencies possess regulatory authority over nuclear facilities.

In recent years and through PSC proceedings and orders, New York State has worked to promote and advance the public interest by gaining decommissioning assurances (some first-of-a-kind) from nuclear plant owners. These include, among others, requiring significant financial assurance and financial

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[13] World Nuclear Association, *Radioactive Waste – Myths and Realities*, February 13, 2025, https://world-nuclear.org/information-library/nuclear-fuel-cycle/nuclear-waste/radioactive-wastes-myths-and-realities.

[14] DOE, "*5 Fast Facts about Spent Nuclear Fuel*," October 23, 2022, https://www.energy.gov/ne/articles/5-fast-facts-about-spent-nuclear-fuel.

[15] Ibid.

[16] Kim, Seungjin, Ph.D., "Study On Small Modular Reactor Technology and its Impact for Indiana," October 31 2024, https://www.in.gov/oed/files/IOED-SMR-Report_Final_2024.pdf

[17] DOE, "U.S. Department of Energy Consent-Based Siting Process for Federal Consolidated Interim Storage of Spent Nuclear Fuel," accessed July 6, 2025, https://www.energy.gov/ne/us-department-energy-consent-based-siting-process-federal-consolidated-interim-storage-spent.

reporting to the State, confirming site restoration commitments as well as State cleanup standards for residual radiation, and increasing the notice time for potential closures, providing for prompt and comprehensive decommissioning and restoration of the New York sites.[18]

Through the ongoing decommissioning of the Indian Point site, which began in 2021, New York has worked to identify and fill regulatory gaps. For example, when NRC no longer stationed resident inspectors at the decommissioned site, New York State hired its own inspector to report to Indian Point daily and provide a regulatory, boots-on-the-ground presence during active decommissioning. In addition, New York's Indian Point Decommissioning Oversight Board (DOB) advises on and assesses the decommissioning of the Indian Point nuclear power plant. The DOB's primary goals are to protect the financial, environmental, and physical interests of the communities affected by the decommissioning, as well as the interests of the current workforce. These examples are further supplemented by the Joint Proposal signed by DPS staff, NYSERDA, DEC, the Office of the Attorney General of New York, local governments, Holtec Decommissioning International, and others to ensure that the public's interests are protected during decommissioning of the site.[19]

3. Outlook (2025 – 2040)

This section provides an outlook for nuclear power in New York State over the next 15 years. The section first considers opportunities for new advanced nuclear to help the state meet its increasing electricity demand and Climate Act targets. Next, the section outlines a number of relevant considerations for the development of new nuclear, including recent federal investments; regulatory requirements for new reactors; and opportunities for collaboration with the federal government, states, and industry to de-risk investments and share knowledge.

3.1. The Opportunity for New Advanced Nuclear

New York is expected to experience a significant increase in demand over the next decade, driven by both electrification and the interconnection of new large loads. These large loads include data centers, semiconductor manufacturing plants, and green hydrogen production plants. Concurrent with this increase in electric demand, analyses have identified a need for dispatchable, emissions-free resource capacity—in addition to the State's existing hydroelectric and nuclear facilities—to maintain system reliability while achieving a 100 percent zero-emissions grid. These resources are particularly needed during prolonged periods of low renewable output, when short-duration storage resources can be quickly depleted. The Electric chapter of this Plan further describes the various scenarios for how the electric grid may evolve over the next 15 years, based on assumptions related to future electricity demand and insights into the current and emerging resources that may be deployed to meet the anticipated demand.

As discussed in the Electricity chapter of this Plan, the PSC is currently considering the full range of technologies that can contribute to the zero emissions by 2040 target including advanced nuclear

[18] Public Service Commission Order Asserting Jurisdiction, Approving and Adopting Joint Proposal, and Continuing Lightened Regulation. CASE 21-E-0130. December 16, 2021.
[19] Public Service Commission Order Asserting Jurisdiction and Approving and Adopting Joint Proposal. CASE 19-E-0730. May 19, 2021.

energy, with a view to determining appropriate actions. As part of the PSC's process, NYSERDA and DPS are conducting a technoeconomic study to better understand what resources are presently or potentially available for deployment in support of achieving the 2040 target, and nuclear energy is one of the candidate technologies examined in the study.

Historically, large LWRs have performed the role of providing reliable, grid-tied, baseload power rather than load-following due to high capital-to-operating cost ratios and current market and regulatory paradigms.[20] While emerging light water SMRs and non-water-cooled reactors could offer greater potential to load-follow and provide select other grid services, regulatory and market changes would be needed to fully realize these capabilities. The primary drivers for deploying grid-tied advanced nuclear reactors are replacing fossil-fuel baseload generation with clean, firm power and meeting load growth.

The delayed build of renewable resources is considered in the Constrained Annual Builds Sensitivity case in the Pathways analysis of this Plan, which identifies a need for additional energy sources to meet the zero emissions by 2040 target if deployment headwinds persist. The identified 15 terawatt-hour (TWh) energy need in 2040 met by gas units in the sensitivity case could potentially instead be served by ~2 GW of new nuclear with transmission or a mix of nuclear and other resources, pending further analysis.

In addition to providing baseload power, nuclear energy provides an opportunity to meet the rising power needs from large industrial loads. In addition, microreactors (<50 MWe) could replace high-emitting energy sources, like diesel engines, in smaller off-grid applications, including in remote communities or for specific commercial or industrial operations. Advanced nuclear could also support non-power applications. Buildings, transportation, and industry consume significant thermal energy. Non-water-cooled reactors, capable of reaching 800°C, could support industrial process heat, petrochemicals, and low-carbon hydrogen production.[21] However, the suitability of advanced nuclear reactors for these applications depends on required temperatures and co-location feasibility, as heat cannot be transported across long distances. Siting near industrial facilities poses safety and regulatory challenges, especially if hazardous materials are involved.[22] These factors create additional hurdles related to siting, emergency planning, and regulatory approvals. While non-power applications present additional revenue and deployment opportunities, they are not the focus of this chapter.

Nationally, there is increased commercial activity around both existing and new advanced nuclear. For example, Google has ordered several SMRs from Kairos, Amazon has agreed to help develop four SMRs with Energy Northwest, and two data center operators, Equinix and Oracle, have also reached development agreements with SMR vendors.[23] Meta has released a request for proposals (RFP) to help it

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[20] Ingersoll, et al. "Managing Drivers of Cost in the Construction of Nuclear Plants" (2020) https://www.nae.edu/239360/Managing-Drivers-of-Cost-in-the-Construction-of-Nuclear-Plants

[21] National Academies of Sciences, Engineering, and Medicine. 2023. *Laying the Foundation for New and Advanced Nuclear Reactors in the United States*. Washington, DC: The National Academies Press. https://doi.org/10.17226/26630.

[22] Ibid.

[23] Gardner, Timothy, 2024. "Google to Buy Power for AI Needs From Small Modular Nuclear Reactor Company Kairos," Reuters, October 14, 2024, https://www.reuters.com/technology/artificial-intelligence/google-buy-power-small-modular-nuclear-reactor-company-kairos-ai-needs-2024-10-14/; Energy Northwest, 2024. "Amazon and Energy Northwest announce plans to develop advanced nuclear technology in Washington," October 16, 2024, https://www.energy-northwest.com/whoweare/news-and-info/Pages/Amazon-and-Energy-Northwest-announce-plans-to-develop--advanced-

develop 1 to 4 GW of nuclear generation by the early 2030s, indicating that it is exploring both conventional-scale and SMR projects.[24] Regarding existing nuclear activity, Constellation has signed its largest power-purchase agreement in a deal with Microsoft that will restore Three Mile Island Unit 1 to service.[25] Constellation also has an agreement with Meta for the offtake of Clinton Clean Energy Center's full output, which will enable its continued operation through the subsequent license renewal.[26]

3.2. Federal Investments in Nuclear

There has been significant federal activity in support of existing and new nuclear energy in recent years. The Infrastructure Investment and Jobs Act appropriated $2.477 billion for DOE's Advanced Reactor Demonstration Program. Tax credits for advanced nuclear reactors and other new zero-carbon power plants were also included in the Inflation Reduction Act (IRA). Qualifying facilities under the IRA can receive a 10-year electricity production tax credit of up to 2.6 cents/kilowatt-hour or a 30 percent investment tax credit. For nuclear energy, these tax credits were broadly maintained in the 2025 budget reconciliation bill. The IRA also included $700 million for DOE to develop supplies of high-assay low enriched uranium (HALEU) needed for some advanced reactor designs. The Accelerating Deployment of Versatile, Advanced Nuclear for Clean Energy Act of 2024 (ADVANCE Act) included provisions on advanced reactor licensing reviews, licensing of nuclear non-electric applications, fusion energy regulation, demonstration of advanced reactors at DOE sites, regulatory requirements for microreactors, and NRC efficiency. Additionally, the Price-Anderson Act, under which the NRC indemnifies new reactors against damage to the public caused by major accidents, was extended through the end of 2065.

In addition to federal legislation, the current federal administration issued in May 2025 several executive orders related to nuclear power.

3.3. Regulatory Framework for New Reactors

Any new nuclear reactor in New York State is currently required to go through a complex set of approvals by the NRC before it can be constructed and operated. The reactor design itself must be certified by the NRC. Once the NRC approves a nuclear power plant design, the certification is valid for 15 years from the date of issuance and can be renewed for an additional 10 to 15 years. Currently, the NRC has certified only a small number of advanced nuclear reactor designs, most notably the Westinghouse AP1000 (1,000 MW) and the NuScale US600 SMR (50 MW per unit), which both employ LWR technology.

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nuclear-technology-in-Washington.aspx; Crosdale, Caroline, 2024. "Microsoft Taps Nuclear Power to Fuel Growing AI Demand," Global Finance Magazine, October 9, 2024, https://gfmag.com/economics-policy-regulation/microsoft-three-mile-island-nuclear-power-ai-demand/

[24] Meta Sustainability, 2024. "Accelerating the Next Wave of Nuclear to Power AI Innovation," December 3, 2024, https://sustainability.atmeta.com/blog/2024/12/03/accelerating-the-next-wave-of-nuclear-to-power-ai-innovation/

[25] Constellation, "Constellation to Launch Crane Clean Energy Center, Restoring Jobs and Carbon-Free Power to The Grid," September 20, 2024, https://www.constellationenergy.com/newsroom/2024/Constellation-to-Launch-Crane-Clean-Energy-Center-Restoring-Jobs-and-Carbon-Free-Power-to-The-Grid.html.

[26] Constellation, "Constellation, Meta Sign 20-Year Deal for Clean, Reliable Nuclear Energy in Illinois," June 3, 2025, https://www.constellationenergy.com/newsroom/2025/constellation-meta-sign-20-year-deal-for-clean-reliable-nuclear-energy-in-illinois.html.

The NRC provides several paths for approval of siting, construction, and operation, giving project developers flexibility in how to approach the licensing process. Within those paths, NRC reviews safety, environmental, and financial considerations for all projects.

10 CFR Part 50 is NRC's traditional two-step licensing process that involves first obtaining a construction permit followed by an operating license. 10 CFR Part 52 offers a more streamlined approach with a combined operating license that merges construction and operating approvals into a single step (see figure below). Both Parts 50 and 52 are primarily designed for large LWRs and contain prescriptive requirements based on decades of design and operating experience.

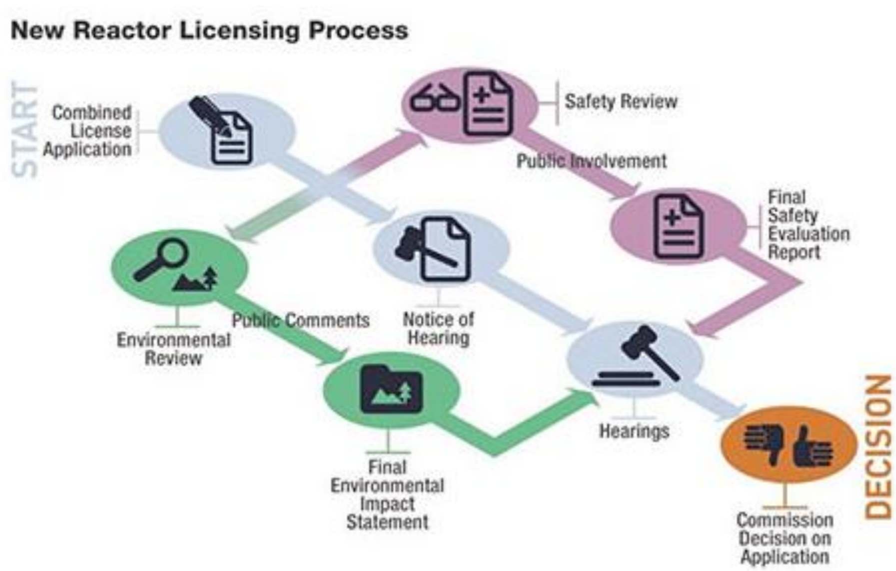

Figure 1: New Reactor Licensing Process

Source: United States Nuclear Regulatory Commission[27]

A new 10 CFR Part 53 is currently under development and aims to provide a voluntary, alternative regulatory framework specifically designed for licensing future commercial nuclear plants, including advanced reactors. Part 53 is intended to be risk-informed and technology-inclusive, focusing on high-level safety goals rather than prescribing specific design features. This approach potentially allows for greater flexibility in meeting safety requirements, accommodating a wider range of advanced reactor technologies and innovative designs. New York State submitted comments to the NRC on the proposed Part 53 rulemaking in February 2025. NRC's rulemaking schedule currently anticipates issuance of a final Part 53 no later than the end of 2027, as required by the federal Nuclear Energy Innovation and Modernization Act.

The NRC also offers developers the option to apply for an early site permit which addresses site safety, environmental protection, and emergency preparedness issues independent of a specific nuclear reactor choice and nuclear plant design. The early site permit application must address the safety and

[27] United States Nuclear Regulatory Commission. "Backgrounder on Nuclear Power Plant Licensing Process" https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/licensing-process-fs.html

environmental characteristics of the site and evaluate potential obstacles to developing an acceptable emergency plan. Resolving site-specific issues early in the process offers developers the benefit of a reduced timeline for construction and operating license reviews and can provide a level of confidence in a project's viability.

NRC regulations for physical and cyber security of nuclear power plants, as described above in Section 2.6, will similarly be important and apply to any new advanced nuclear plants. As discussed, these standards include physical security programs and contingency plans for nuclear material and cyber security measures to protect cyber systems from unauthorized access to, theft, misuse, or damage of nuclear materials and facilities. Proactive security measures can be incorporated in the design of the plant, be part of operating practices, and include the capability to respond to intrusion or attack.[28] Continued partnerships and collaboration with oversight and permitting agencies, law enforcement, and emergency responders on any federal changes to regulations, licensing, and permitting issues around security at nuclear facilities will continue as advanced nuclear develops and the grid evolves. The NRC, supported by cyber security experts from DOE national laboratories and American universities will be critical partners in developing any further security guidance pertaining specifically to advanced nuclear technologies.

4. Themes and Recommended Actions

4.1. Ensuring the Continued Operation of the Existing Nuclear Fleet

As noted above in Table 1, three of the State's existing nuclear facilities are nearing the end of their operating license. The ZEC program also expires in March 2029, near the time that the first two operating licenses expire at Ginna and Nine Mile Point Unit 1. While the PSC is currently considering the future of the program in its Clean Energy Standard proceeding, a comparison between the Additional Action and No Action scenarios from the Pathways analysis of this Plan points to the importance of maintaining the existing nuclear fleet. Under the Additional Action scenario, existing nuclear plant licenses are extended from 60 to 80 years, and the State's nuclear generation capacity remains steady at 3,305 MW through 2040. Under the No Action scenario, nuclear licenses are not extended, which could be the case absent continued support, resulting in decommissioning of the existing plants as they reach their retirement age. Nuclear generation capacity under No Action decreases by 1,201 MW in 2030 and 2,033 MW in 2040, contributing to higher natural gas capacity and generation in the No Action case. These results illustrate the importance of ensuring the continued operation of the existing nuclear fleet to help meet the State's zero emission by 2040 target.

In addition to the ZEC program, additional considerations for the State's existing nuclear fleet are outlined below.

4.1.1. License Extension

Nuclear plants receive an initial license from the NRC to operate for 40 years and are eligible to apply for extensions in 20-year increments. License renewal beyond license year 60, known as a subsequent

[28] Nuclear Regulatory Commission, "Defense-In-Depth Observations and Detailed History," accessed July 6, 2025, https://www.nrc.gov/docs/ML1327/ML13277A425.pdf.

license renewal, is being actively pursued by many operating plants in the United States. All of the operating nuclear plants in New York are currently in their first 20-year extension (40- to 60-year operating term) and are expected to apply for subsequent 20-year extensions for the 60- to 80-year term. The NRC requirements for subsequent license renewal beyond year 60 is nearly identical to the process for license extension beyond year 40, requiring licensees to review the systems, structures, and components within NRC jurisdiction and demonstrate how the continued safety of those systems will be monitored and maintained during the license renewal period.

NRC normally requires license renewal applications to be submitted five years prior to a plant's license expiration date. The two New York plants with earliest license expiration in 2029 are Nine Mile Unit 1 and Ginna. While under Exelon ownership, Exelon requested, and NRC granted, exemptions to the license renewal application timelines for Nine Mile Unit 1 and Ginna, shortening the application period to three years. Exelon's exemption application projected a need to begin license renewal application preparation approximately two years before application submission (see Table 2). The other two New York plants, FitzPatrick and Nine Mile Unit 2, have license expirations in 2034 and 2046, respectively.

Table 2: Nuclear Power Plant License Renewal Application Timelines

Facility	License Expiration	Original Renewal Application Deadline	Exelon Projected Application Prep Start/Business Decision to Renew[1]	Application Deadline under Approved Exemption	Assumed Application Prep Start/Business Decision to Renew[2]
Nine Mile Unit 1	Aug 2029	Aug 2024	April 2022	Aug 2026	April 2024
Ginna	Sept 2029	Sept 2024	June 2022	Sept 2026	June 2024

Notes:

[1] Explicitly stated in Exelon exemption request

[2] Extrapolated based on Exelon estimate under normal requirements

4.1.2. Managing Aging Plants

For licensees to ensure continued safe operation, monitoring and protecting against deficiencies inherent to plant aging will be a significant undertaking. As part of the license renewal process, the NRC reviews the safety and technical requirements for an extended license term, and the renewal is based on the NRC's assessment of the plant's operational safety, including environmental protection, being assured during the 20-year extension period.[29] The license renewal process considers primarily passive structures and components, however their degradation may not be as readily apparent as the degradation of active structures and components.[30] One particular challenge is that it is not yet possible to predict the time for the onset of passive structure and component degradation.[31] However, the technical community has identified a number of challenges for plant operation beyond 60 years,

[29] Title 10 of the Code of Federal Regulations (10 CFR) Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants."

[30] Nuclear Regulatory Comission, "Review of Aging Management Programs: Compendium of Insights from License Renewal Applications and from AMP Effectiveness Audits Conducted to Inform Subsequent License Renewal Guidance Documents," June 15, 2026, https://www.nrc.gov/docs/ML1616/ML16167A076.pdf.

[31] Ibid. (p. 27)

including the possible onset of previously known degradation mechanisms that have not yet been observed, the acceleration of degradation already observed during the previous years of operation, and the emergence of new mechanisms particularly related to the operation beyond 60 years.[32] Therefore, as the owners and operators of New York's existing facilities consider their license renewal applications from 60 to 80 years, the NRC and the companies must work to develop a proactive and robust aging management program to ensure continued safety and reliability.

4.1.3. Power Uprates

When the NRC licenses a commercial nuclear power plant, it sets limits on the maximum power output for the reactor core.[33] However, commercial reactors are typically designed with excess capacity to allow for a potential uprate of this power output.[34] The NRC has approved power uprates for some of New York's nuclear facilities in the past, including, for example, a 48 MWe uprate for Nine Mile Point 2 in 1995, a 14.1 MWe uprate for Indian Point 3 in 2002, and a 49.5 MWe uprate for Indian Point 3 in 2005.[35] As electricity demand continues to grow, New York should work with the companies to identify and support safe and economic power uprate opportunities at the existing nuclear facilities.

Recommendations

- The PSC should continue to conduct its ongoing evaluation of the extension of the ZEC program and conclude this evaluation in a timely manner, prior to any federal relicensing application deadlines, to ensure the continued operation of the existing nuclear fleet to help meet State climate goals. In addition, the preservation of New York State's existing upstate nuclear facilities will help to maintain fuel diversity and fuel security in the State. Any extension should be done with ratepayer protection in mind, in addition to the reliability needs of the grid.
- The State should identify and support safe and economic power uprate opportunities at its existing nuclear facilities.

4.2. In-depth Examination of Advanced Nuclear

Recognizing the opportunity for new advanced nuclear described above, New York State began the process of developing a Master Plan, starting with the publication by NYSERDA of the Blueprint[36] released in January 2025. The Blueprint recognized that any action to pursue new advanced nuclear technology development in New York State requires consideration and assessment of a wide range of issues:

- Technological and Commercial Readiness: While large LWRs have operated commercially for decades, this is not the case for small modular reactors and advanced nuclear technologies more

[32] Ibid. (pp. 27-28)
[33] Nuclear Regulatory Comission, *Backgrounder on Power Uprates for Nuclear Plants*, January 12, 2022, https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/power-uprates.html.
[34] Ibid.
[35] Nuclear Energy Institute, *U.S. Nuclear Plant Actual and Expected Uprates by Plant*, August 2022, https://www.nei.org/resources/statistics/us-nuclear-plant-actual-and-expected-uprates.
[36] NYSERDA, "Blueprint for Consideration of Advanced Nuclear Energy Technologies," January 2025, https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Programs/Advanced-Nuclear/GEN-advnucbp-r-1-v1-complete.pdf

broadly in the United States. Many of these designs still need to receive regulatory approval from the NRC. Project development is at varying levels of maturity, and in most cases finance and investment decisions have not yet been finalized, with perceived and acceptable commercial risk levels still under consideration. In addition to the technical and commercial readiness of specific reactor designs, corresponding fuel requirements also differ and the readiness of the fuel supply for each new reactor type varies. Understanding of all these factors is important to decide what advanced nuclear technology options may be suitable for New York.

- Economic Growth: The commercial environment may provide new opportunities well-suited for potential new nuclear power. Advanced nuclear technologies could support new economic development opportunities that require large sources of power such as semiconductor fabrication plants and data centers. Industry is currently exploring potential co-location of advanced nuclear reactors at large offtaker sites and power purchase agreements to help secure the considerable financing required for new reactor licensing and construction.
- Safety: The U.S. commercial nuclear industry has a strong safety record and advanced reactors offer the potential for even safer designs that could reduce both the likelihood and consequences of core damage events. For instance, advanced technologies take advantage of passive safety features that cause a reactor to shut down safely without the need for operators to take remedial action after the loss of electrical power or reactor coolant. A full understanding of these features of advanced nuclear technologies and of NRC regulation and the broader regulatory context is important to ensure that deployment of such technologies only proceeds on the basis of a shared understanding of robust safety features of these designs.
- Climate Resiliency: The nuclear industry has established seasonal and extreme weather readiness programs and procedures that provide a systematic and cross-functional approach to prepare for changing weather. As the State examines opportunities for new advanced nuclear development, it is critical to ensure existing and potential future nuclear facilities plan for resilient operation using localized forward-looking projections of climate hazards out to an appropriate multi-year timescale, including in the consideration of facility siting. These efforts can proactively anticipate, evaluate, plan for, and implement mitigative measures, as necessary, to minimize future impacts to plant operations from climate change.
- Siting and Community Readiness: The NRC has a predefined list of siting criteria that address reactor design/power, engineering standards used, probability of accidental release of radiation, passive and inherent safety features, meteorological, geological, and hydrological conditions at the site, and population density. Consideration of these criteria is a prerequisite to determining where any advanced nuclear projects might be sited. Assessing community readiness and the strength of community support also will be an important part of the siting process in New York State. Project proponents should follow best practices for any new energy facility and robust stakeholder engagement, which includes communicating early and often, as well as promoting knowledge exchange, transparency, and two-way dialogue with host communities. Where new technologies will be implemented, the State, researchers, and industry partners also have

important roles in facilitating information sharing. The State could also consider initiatives aimed at identifying willing communities and preparing them to host nuclear facilities.

- Cost and Financing: Cost and financial risk are key concerns for developing new advanced nuclear plants. For any technology, including advanced nuclear, first-of-a-kind (FOAK) deployment costs will be relatively high and uncertain. Costs and cost uncertainties will tend to decrease with learning and supply chain development when progressing toward "nth-of-a-kind" (NOAK) deployment. The State should assess the roles the various partners in advanced nuclear projects can and should play to jointly manage and overcome those cost challenges and risks such that financing becomes feasible especially for FOAK projects. The key project partners in these structures include project developers, funders, suppliers, buyers of the energy generated by the plant, federal government and state government. Facility financing should also be sufficient to offset costs to local governments for hosting the facility, including for emergency preparedness. Additionally, the State supports decommissioning financing that separates decommissioning funds for radiological decommissioning from site restoration to reduce the risk of overruns during decommissioning.
- Supply Chain: A fairly well-established global supply chain exists for at least the Gen III+ LWR equipment, components, and materials to support the development of early projects. Many developers of new advanced nuclear are developing new suppliers for their designs, although more project commitments are needed to solidify the development path. Nearly all the non–water-cooled reactors will need new supply chains to produce HALEU fuels and the supply of HALEU is currently a bottleneck for advanced nuclear reactors coming online and proving their technological readiness. Efforts are being made to re-onshore part of the fuel supply chain, though commercialization of HALEU production in the United States is still being developed. To prepare for the construction and operation of advanced nuclear in New York, opportunities should be identified to expand current firms or establish new manufacturing facilities that can produce essential nuclear components and obtain the necessary certifications for new and existing plants to encourage in-state production.
- Workforce: Strengthening the State's nuclear workforce is an important component of preparing for potential future deployment of advanced nuclear technologies. While national craft labor shortages are impacting the construction industry more generally, emphasizing the development of craft labor presents an opportunity to create many new high-paying construction jobs in the State. Training an expanded workforce will require partnerships with local organizations, including universities and technical colleges. The State can potentially alleviate construction and operating labor supply issues by developing apprenticeship and pre-apprenticeship programs and instituting craft labor contracting policies to attract and maintain employees.
- Fusion Reactors: Fusion reactors use a fundamentally different type of nuclear reaction from all prior and existing nuclear plants including the new Gen III+ and Gen IV reactor designs, which all rely on nuclear fission, the splitting of atoms. Fusion is a nuclear reaction that releases atomic energy by fusing two atoms (typically forms of hydrogen) into a larger, nonradioactive atom such

as helium. This process can release large amounts of energy sufficient to make steam for electrical turbines or heat for other uses, though this capability has not yet been successfully demonstrated. Several companies are pursuing commercial fusion and making progress toward the goal of net positive power output. Some of these companies aspire to commercialization timelines that make them relevant for the State to consider as part of its further energy planning.

- Waste Generation and Disposal: Many advanced nuclear designs incorporate increased fuel efficiency and waste reduction, and recycling waste fuel from advanced reactors is also being researched. While significant economic and cost barriers must be addressed, there are technologies seeking to increase the circularity of the nuclear fuel cycle. The use of HALEU and advanced fuel forms in many non-water-cooled reactors will result in waste with different volumes, compositions, and disposal challenges that can introduce unique waste management considerations given limited experience in handling diverse waste streams and the potential need for new processing and disposal methods. Traditional waste management processes and costs may not be analogous to the waste from advanced nuclear. Further assessment is needed in respect of the management and disposal of nuclear waste streams from SMRs.

As stated in the Blueprint publication, the Master Plan comprising studies on the above topics is expected to be completed by the end of 2026.

Recommendations

- Through its Master Plan, which has been underway since January 2025, the State should continue to examine key considerations for advanced nuclear for long-term planning. The Master Plan process should examine the key issues raised by the Blueprint[37] and develop recommendations for the implementation of advanced nuclear technologies in the State. The topics should include technology feasibility; regulatory, safety, siting and waste; environmental and climate justice; policy options, including risk-sharing; supply chain, workforce, and economic development; research and development; and fusion.

4.3. Multi-State Collaboration for Advanced Nuclear Reactors

Many of the issues under consideration in the Master Plan process also present themselves for action that extends beyond New York. This is especially the case with respect to cost and financing issues. An important opportunity to help manage these challenges is to pursue a “pipeline” of projects, enabling risk reduction, economies of scale and resulting cost reductions. This could take the form of combining in-State advanced nuclear developments with other states’ developments. In addition, New York has the opportunity to participate in national activities designed to lead to technology demonstrations and supply chain development, to both boost availability of supply chain and workforce but at the same time identify and pursue opportunity for cultivation of local labor forces and supply chain niches in New York.

[37] NYSERDA, “Blueprint for Consideration of Advanced Nuclear Energy Technologies,” January 2025, https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Programs/Advanced-Nuclear/GEN-advnucbp-r-1-v1-complete.pdf

For advanced nuclear, NYSERDA co-chairs two multi-state nuclear initiatives. In 2023, NASEO partnered with the National Association of Regulatory Utility Commissioners (NARUC), to form the NASEO-NARUC Advanced Nuclear State Collaborative (ANSC) with 32 member states.[38] The ANSC convenes state officials to exchange information related to the planning and deployment of new advanced nuclear generation.

In early 2025, NASEO partnered with DOE's GAIN to form the NASEO Advanced Nuclear First Movers Initiative,[39] a multi-state initiative on nuclear energy focused on risk-sharing, driving down costs, and accelerating market adoption, co-led by New York State. The Initiative includes a group of eleven states along with key private sector partners, DOE, and Idaho National Laboratory. Its primary purpose is to facilitate public-private partnerships for advanced nuclear market adoption leading to a reduction in financial and technology risks, support deployment policies, develop knowledge of supply chain needs, streamline permitting processes, coordinate procurement agreements, and identify new financing structures.

Collaborations with other states as well as Ontario offer opportunities to build on regional momentum to strengthen nuclear supply chains, share best practices, and support the responsible development of advanced nuclear technologies.

Recommendations

- Through its leadership of the First Movers Initiative and other initiatives, the State should continue to pursue multi-state collaborations in moving project development forward. The State should explore collaboration opportunities with other states to develop a nuclear supply chain and workforce that can support the economies of scale necessary to reduce the nuclear deployment cost curve, such as collaboration to help build out an advanced nuclear reactor order book, supply chains for construction of new reactors, and a trained workforce for construction and plant operations, among others.
- The State should explore risk sharing options for new nuclear deployment. This could include risk-sharing mechanisms with the federal government, other states, and/or industry to reduce the potential costs of any new advanced nuclear deployment.

4.4. Opportunities for Early Deployment Action

New and continued investments in zero-emissions technologies will be critical for meeting the State's increased electricity load and zero emissions by 2040 target. As outlined above, the development of new advanced nuclear is an area of opportunity to help the State meet its targets. In parallel with ongoing initiatives to assess the larger potential of advanced nuclear in the State, New York should support risk-

[38] National Association of Regulatory Utility Commissioners, *Core Sector: Electricity/Energy - Advanced Nuclear State Collaborative*, accessed July 6, 2025, https://www.naruc.org/core-sectors/electricity-energy/nuclear-energy/advanced-nuclear-state-collaborative.
[39] National Association of State Energy Officials, *Nuclear Energy*, accessed July 6, 2025, https://www.naseo.org/issues/electricity/nuclear.

informed early development and deployment efforts to catalyze the advanced nuclear industry in the near-term.

A significant step to pursue early deployment action was taken on June 23, 2025, when Governor Hochul directed the New York Power Authority (NYPA) to develop and construct one or more zero-emission advanced nuclear power plants in Upstate New York totaling at least one gigawatt of generating capacity to support a reliable and affordable electric grid.[40]

As a further example of an early deployment action, NYSERDA is supporting Constellation's pursuit of federal planning grant funding that would support its efforts to seek an early site permit for the addition of one or more new advanced nuclear reactors at its Nine Mile Point site in Oswego County.[41] An early site permit is granted by the NRC for future development of a nuclear power plant and is valid for 10–20 years. This early-stage preparatory work is consistent with the exploratory approach of the ongoing Master Plan process to study the potential role of advanced nuclear to meet the State's energy objectives, reliability, economic growth, affordability, and placement within the State's larger decarbonization strategy.

Recommendations

- Through NYPA's efforts to develop at least 1 GW of nuclear power generation and other actions, the State should continue to pursue opportunities for early deployment action. Early deployment action should be undertaken in coordination with the Master Plan process and reflecting collaboration with other states to ensure that any deployment commitments leverage the insights and benefits from those initiatives.

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[40] *Governor Hochul Directs New York Power Authority to Develop a Zero-Emission Advanced Nuclear Energy Technology Power Plant*, June 23, 2025, https://www.governor.ny.gov/news/governor-hochul-directs-new-york-power-authority-develop-zero-emission-advanced-nuclear-energy

[41] NYSERDA, *$1 Billion Investment In Climate Action For More Sustainable And Affordable Future Announced*, January 14, 2025, https://www.nyserda.ny.gov/About/Newsroom/2025-Announcements/2025-01-14-Governor-Hochul-Commits-More-Than-1-Billion-To-Tackle-The-Climate-Crisis