STATE OF NEW YORK
DEPARTMENT OF PUBLIC SERVICE

Case 26-E-0335 – Proceeding on Motion of the Commission to Implement a Nuclear Reliability Backbone.

DEPARTMENT OF PUBLIC SERVICE STAFF NUCLEAR RELIABILITY BACKBONE WHITE PAPER

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INTRODUCTION

On June 11, 2026, the Public Service Commission (PSC or Commission) issued the Order Establishing a Nuclear Reliability Backbone Process (Initiating Order).[1] The Initiating Order began a process to evaluate and facilitate the development of Governor Kathy Hochul's Nuclear Reliability Backbone (Backbone) goal of five gigawatts (GW) of new advanced nuclear.[2] This includes potential mechanisms for integrating new nuclear generation in a timely and cost-effective manner and with maximum benefits to New York's energy system, economy, and ratepayers. At the same time, Department of Public Service (DPS) Staff and the New York State Energy Research and Development Authority (NYSERDA) published an Advanced Nuclear Policy Options Paper (Options Paper) that analyzed and assessed many of these topics. In the Initiating Order, the PSC directed DPS Staff to prepare a white paper offering recommendations to address the issues and policy options considered in the proceeding, informed by public comments and the technical conference convened by DPS and NYSERDA on October 5, 2026. These efforts align with the work advanced by NYSERDA and DPS Staff, in collaboration with other agencies, to develop an Advanced Nuclear Master Plan for New York (Master Plan).[3] The Master Plan encompasses a range of workstreams relevant to advanced nuclear development including supply chain, workforce, regulatory matters, siting, and other aspects.

The Nuclear Reliability Backbone was conceptualized using insights from various State grid planning and modeling efforts, including the Coordinated Grid Planning Process

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1 Case 26-E-0335, Proceeding on Motion of the Commission to Implement a Nuclear Reliability Backbone, Order Establishing a Nuclear Reliability Backbone Process (issued June 11, 2026).

2 The term "advanced nuclear" refers to a range of newer designs that improve on conventional reactors through features such as passive or inherent safety systems, modular construction, alternative coolants, and operational versatility. This includes both designs that are typically categorized as Generation III+ and Generation IV.

3 See New York State Energy Research and Development Authority, Advanced Nuclear Energy (accessed November 9, 2026), available at: https://www.nyserda.ny.gov/All-Programs/Advanced-Nuclear-Energy.

(CGPP)[4] and the 2025 State Energy Plan (SEP).[5] Both of these initiatives point to nuclear as a valuable resource on New York's future least-cost grid, consistent with the goals set out in the Climate Leadership and Community Protection Act (CLCPA or Climate Act).[6] Results from the CGPP and SEP also demonstrate that new nuclear generation development would offer significant land-use benefits across the State. These modeling efforts underscore the need to coordinate any new nuclear generation with adequate transmission that is capable of moving energy to areas with high demand that has outpaced the local transmission and generation capacity.

This White Paper aims to address three main questions posed by the Initiating Order: (1) how the proceedings described in the Initiating Order will support the development of a Nuclear Reliability Backbone, with particular focus on CGPP investment options and the New York Power Authority's (NYPA) ongoing nuclear development work; (2) how current and ongoing investments in generation and transmission can support the development of a Nuclear Reliability Backbone; and (3) how options identified in the Options Paper, and additional options as received through stakeholder feedback, could support the funding, sequencing, and management of risks and costs of developing a Nuclear Reliability Backbone.

Staff acknowledges that the successful and cost-effective deployment of new advanced nuclear requires a whole-of-government approach to integrate the full suite of appropriate processes and support mechanisms. This integrated framework includes actions that may rely on ratepayer funds and thus are under the Commission's jurisdiction, but also other actions that may look to other sources of financial support or otherwise go beyond the

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4 Case 20-E-0197, Transmission Planning Pursuant to the Accelerated Renewable Energy Growth and Community Benefit Act, Order Approving a Coordinated Grid Planning Process (issued August 17, 2023).

5 New York State Energy Planning Board, 2025 New York State Energy Plan, available at: https://energyplan.ny.gov/Plans/2025-Energy-Plan.

6 See Chapter 106 of the Laws of 2019 (codified, in part, in Public Service Law (PSL) §66-p). The CLCPA became effective on January 1, 2020, and includes various targets such as generating 70% of electricity from renewable energy systems by 2030; a "statewide electrical demand system" that will be "zero emissions" by 2040 (Zero by 40); and an 85% reduction of economy-wide greenhouse gases, as compared to 1990 levels, by 2050. The Fiscal Year 2026-2027 Enacted Budget adopted changes to the greenhouse gas emissions targets of the CLCPA but did not modify the energy sector targets.

Commission's purview. Staff therefore proposes to proceed in a deliberate and responsible manner that lays the groundwork for Commission-directed programs which fit within the integrated framework, but does not commit ratepayers to a fixed pathway before a final design of the integrated framework has been completed. By formulating actions and implementation strategies in this way, the Commission will be prepared to act rapidly when the appropriate conditions arise, while continuing to protect ratepayers from premature or unnecessary commitments.

BACKGROUND

The Initiating Order began a process to evaluate and facilitate the development of the Backbone, including the potential mechanisms for the timely and cost-effective integration of new advanced nuclear technology with maximum benefits to New York's electric grid and ratepayers. The Backbone was conceptualized using insights from various State planning efforts, including the CGPP and the SEP, as further discussed in this White Paper, which point to nuclear generation as an important resource to realize New York's future least-cost zero-emissions grid. The need for the Backbone was first identified by Governor Hochul in her 2026 State of the State address, wherein she directed DPS to consider, review, and facilitate a cost-effective pathway to four GW of new advanced nuclear energy for New York. This announcement followed her 2025 directive to the NYPA to develop and construct an advanced nuclear power plant in upstate New York capable of generating at least one GW of zero-emissions electricity, either alone or in partnership with private entities.[7] The Governor's directive cited the need for new, clean electricity to accommodate economic growth and fossil fuel plant retirements, while meeting growing demand from electric vehicles, building electrification, and industrial development. The development of the Backbone is intended to complement New York's ongoing deployment of renewable energy by adding zero-emissions baseload power to the energy mix, increasing reliability and affordability while advancing the achievement of Climate Act goals.

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[7] Governor Kathy Hochul, "Governor Hochul Directs New York Power Authority to Develop a Zero-Emission Advanced Nuclear Energy Technology Plant" (issued June 23, 2025), available at: https://www.governor.ny.gov/news/governor-hochul-directs-new-york-power-authority-develop-zero-emission-advanced-nuclear-energy (2025 NYPA Directive).

New York's existing nuclear fleet has provided significant contributions to the clean energy resource mix in New York State. Currently, four nuclear power reactors operate in Upstate New York State: (1 & 2) Nine Mile Point Clean Energy Center – Units 1 and 2 in Scriba, New York, (Nine Mile Point); (3) James A. FitzPatrick Nuclear Power Plant in Scriba, New York (FitzPatrick); and (4) R.E. Ginna Nuclear Power Plant in Ontario, New York (Ginna). Previously, three reactors also operated at the Indian Point site in Downstate New York, with Indian Point Unit 1 operating from 1962 until 1974 when it was permanently shut down, and Indian Point Unit 2 and Unit 3 operating until 2020 and 2021, respectively. The Shoreham Nuclear Power Station, located on Long Island, did not proceed to commercial operation, and completed decommissioning in 1995. In 2025, nuclear facilities were responsible for approximately 21% of energy production statewide,[8] a drop from 34% in 2019 following the closure of the Indian Point Energy Center.[9]

Together, the 2026 Backbone directive and the 2025 NYPA Directive amount to five GW of new nuclear generation. Coupled with New York's existing 3.4 GW of nuclear generation assets, the State's total nuclear generation would total 8.4 GW of clean, reliable, baseload power to support millions of New Yorkers statewide. This generation, paired with the necessary transmission facilities to deliver nuclear generation across the State, would comprise the "Nuclear Reliability Backbone." The initial one GW project that Governor Hochul called upon NYPA to develop is intended to serve as the first step in procuring new nuclear generation to support the Nuclear Reliability Backbone.[10] NYPA's nuclear initiative includes requirements to evaluate technologies, business models, and locations for nuclear development. The process must include site and technology feasibility assessments and financing options, as well as coordination with NYSERDA- and DPS-led studies in the Master Plan. The one GW

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8 NYISO 2026 Load & Capacity Data Report (issued April 2026), available at: https://www.nyiso.com/documents/20142/2226333/2026-Gold-Book-Public.pdf/a8fd42fe-5a8c-88cb-5052-f93dfd6423b8.

9 Data regarding New York's nuclear energy profile are available at: https://www.eia.gov/state/?sid=NY#:~:text=In%202023%2C%20New%20York%20ranked,nuclear%20power%20plants%2C%20shut%20down.

10 See 2025 NYPA Directive.

announcement builds on regional momentum to strengthen nuclear supply chains, share best practices, and support the responsible deployment of advanced nuclear.

On June 11, 2026, the Commission issued the Initiating Order, which was accompanied by the Options Paper jointly issued by DPS Staff and NYSERDA. The Options Paper evaluated policy mechanisms to support new grid-scale advanced nuclear projects, assesses barriers to commercial viability, risk management, potential financial support and funding thereof, technology selection, and procurement approaches that can enable project viability while minimizing costs and risks to the public. More than 3,000 comments were received on the issues presented in the Initiating Order and Options Paper, including those from individuals, industry, and advocacy organizations. As directed by the Initiating Order, DPS Staff convened a Technical Conference on the contents of the Initiating Order and the Options Paper on October 5, 2026.

Several reinforcing workstreams support the development of the Backbone and led to its conception, including efforts under the Clean Energy Standard (CES), the State Energy Plan, the Coordinated Grid Planning Process, and the Zero Emissions Credit (ZEC) program, which are all described in more detail in the Discussion section below.

COMMENTS

Staff thanks stakeholders for their high level of participation in the Nuclear Reliability Backbone proceeding. The Commission received over 3,000 public comments relating to the Initiating Order and the Options Paper. The Initiating Order and accompanying Options Paper covered a wide range of topics, and the Initiating Order itself included eleven questions for stakeholder consideration, each of which are discussed throughout this White Paper using insights garnered through stakeholder responses.

Supporters of the Backbone generally emphasized the following characteristics of advanced nuclear generation: potential positive impacts on workforce and economic development; ability to provide clean, firm capacity; limited land use; and expected useful life. Proponents also cited rising ratepayer costs, viewing these pressures as a reason to invest in nuclear energy. Many other public comments also expressed concern about the Backbone and the development of nuclear energy, generally, including but not limited to concerns about rising ratepayer bills; cost overruns and associated public impact; length to commercial operation; the

desire to focus on renewables; nuclear waste; and safety. This White Paper describes potential approaches that can address these concerns.

Stakeholders including the New York Independent System Operator (NYISO), Natural Resources Defense Council (NRDC), Constellation Energy Generation (Constellation), the Joint Utilities,[11] National Grid, Nuclear NY (NYY) jointly with the Mothers for Nuclear (MfN) and New York Energy & Climate Advocates (NYECA), and New Yorkers for Clean Power (NYCP) recognized nuclear energy's distinct ability to provide firm, reliable, zero-emission capacity required by the State.

Many stakeholders identified workforce development and economic opportunities as positive elements of the Backbone. Labor organizations including Central and Northern New York Building & Construction Trades Council, Home Builders and Remodelers of Central New York Association, Climate Jobs New York, Upstate Energy Jobs, New York City District of Carpenters, Steamfitters Local 638, New York State Building & Construction Trades Council, Boilermakers Local 5, UA Local #81 Plumbers & Steamfitters, and International Brotherhood of Electrical Workers of the Utility Labor Council of New York State all voiced strong support for the Backbone based on its potential opportunity to create and sustain a significant local workforce. Local community representatives and companies such as Cattaraugus County Legislative members, Oswego County representatives and businesses, Greater Binghamton Chamber of Commerce, the Manufacturers Association of Central New York, New York Building Congress; Rochester Technology & Manufacturing Association, and Manufacturers Association of the Southern Tier all voiced support for the Backbone's ability to provide firm, reliable energy while supporting economic opportunity.

Advocacy organizations including United for Clean Energy, South Shore & Rockland Audubon Societies, Citizens Action of New York, Reinvent Albany, LEAF of Hudson Valley & Munsee Grassroots Energy Project, Georgians for Affordable Energy, Promoting Health and Sustainable Energy, Campaign for Renewable Energy, and Alliance for a Green

[11] The Joint Utilities include Central Hudson Gas & Electric Corporation (Central Hudson), Consolidated Edison Company of New York, Inc. (Con Edison), New York State Electric & Gas Corporation (NYSEG), Niagara Mohawk Power Corporation d/b/a National Grid (National Grid), Orange & Rockland Utilities, Inc. (Orange & Rockland), and Rochester Gas and Electric Corporation (RG&E).

Economy (AGREE), along with a cohort of 37 NYS Legislators (NYS Legislative Cohort), opposed the Backbone and shared concerns around program cost, risk, waste, safety, and length to commercial operation. The City of New York (NYC), NRDC, Pace Energy & Climate Center (PECC), AGREE, and Multiple Intervenors all expressed a desire for the Backbone to be assessed against alternative portfolios or integrated into system planning.

Stakeholders also referenced the precedent of nuclear development in the United States, most particularly in reference to the construction of Vogtle Units 3 and 4 in Waynesboro, Georgia. The reactors entered commercial service in 2023 and 2024, respectively, after facing significant cost overruns and extensive delays. New York Energy Consumers Council (NYECC), NYS Legislative Cohort, Cornell Nuclear is Clean Energy (NiCE) and Cornell American Nuclear Society (ANS), Climate Jobs NY, Nuclear Energy Institute (NEI), Reinvent Albany, Multiple Intervenors, Alliance for Nuclear-Free New York, Georgians for Affordable Energy, National Grid, NYC, Constellation, AGREE, and the MfN/NNY/NYECA, and others addressed the challenges faced by the Vogtle projects. These commenters raised concern about the potential for any New York project to face similar cost overruns and delays that could lead to excessive and burdensome ratepayer impacts. Likewise, commenters encouraged the Commission to mitigate execution risk as much as possible and develop a rigorous proposal evaluation to avoid a similar outcome to the Vogtle projects. Staff acknowledges that any new nuclear development in New York State will require meticulous planning and implementation to prevent the same delays and burdens like those seen in the Vogtle projects.

DISCUSSION

The Initiating Order described and requested stakeholder feedback on the Nuclear Reliability Backbone concept, and sought input on a series of questions organized into four categories: Coordination and Approach, Financing and Commercial Viability, Procurement, and Nuclear Pipeline and Sequencing. Throughout the Discussion Section below, Staff addresses each category and uses the subsequent analysis and consideration to make five recommendations to the Commission.

Coordination and Approach

The Initiating Order posed a series of questions regarding the coordination and approach to new nuclear development in New York State. These questions encouraged Staff and stakeholders to consider the safety, cost, and timeliness of developing a Nuclear Reliability Backbone while exploring how this new initiative will effectively and productively engage with other proceedings underway before the Commission. The Initiating Order also invited Staff and stakeholders to consider how transmission, non-nuclear generation, and nuclear procurements should be coordinated to maximize ratepayer benefits in the State, bearing in mind that the Backbone will necessarily interact with a variety of other proceedings. Staff remains dedicated to building on the efforts of these proceedings and avoiding duplicative work. The following section explores each of these topics, describes cross-proceeding coordination, evaluates the Backbone's cost effectiveness, safety considerations, and Staff's ultimate recommendation to adopt the Nuclear Reliability Backbone.

1. Coordination and Proceeding Interaction

Several of the State's planning efforts provide further insights into the benefits and necessity of a Nuclear Reliability Backbone, particularly as it relates to the reliability of the New York energy system. The 2025 SEP modeled multiple scenarios to show future energy pathways for New York. The Pathways Analysis in the 2025 SEP explored how the State's energy supply and delivery systems would meet forecasted needs through 2040 and beyond using the evaluation of five scenarios: (1) No Action; (2) Current Policies; (3) Additional Action;

(4) Net Zero A; and (5) Net Zero B.[12] New nuclear was included as a candidate resource in each of these scenarios, with new nuclear capacity being selected by the model if found to be economic.

Across these scenarios, the SEP model found that new nuclear can support a zero-emissions grid and demonstrated that the availability of nuclear resources can lower system costs compared to a scenario where no nuclear is available. Furthermore, the analysis indicated that new nuclear can be an attractive solution to support a zero-emissions electric grid alongside renewables and storage, accompanied by additional transmission to ensure the delivery of clean energy across the State.

Importantly, the development of the Backbone will happen within an integrated state planning approach including the newly developed Energy Infrastructure Development Plan (EIDP), as announced by Governor Hochul in September 2026.[13] The EIDP will enhance New York's energy planning process by directing the SEP Board to engage in comprehensive integrated planning to ensure the State has a clear and actionable perspective on the infrastructure it needs to meet demand reliably. The EIDP is intended to guide infrastructure investment decisions and maximize the benefit of those investments. The EIDP will coordinate new clean generation and transmission to advance progress toward New York's zero emissions targets, maintain reliability, and control costs. The EIDP will begin in 2026 as part of the SEP and continue through the 2027 SEP Interim Plan. The first comprehensive EIDP is expected by December 2029, with new EIDPs continuing as part of the SEP thereafter.

In addition to the State's energy planning process, the coordination and approach of the Backbone is being developed alongside Staff's ongoing CES Procurement Review, as guided by the Commission's May 15, 2025 Biennial Review Order, in which Staff was directed to examine how the renewable procurement program could reduce overall costs for ratepayers

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[12] See 2025 New York State Energy Plan, Volume II – Plan Analyses and Impacts, Pathways Analysis, available at https://energyplan.ny.gov/-/media/Project/EnergyPlan/files/2025-Energy-Plan/Pathways-Analysis.pdf (2025 Pathways Analysis).

[13] Governor Kathy Hochul, "Governor Hochul Expands Programs to Help New Yorkers Lower Home Heating Costs, Increase Energy Supply and Strengthen Sustainable Infrastructure" (issued September 22, 2026), available at: https://www.governor.ny.gov/news/governor-hochul-expands-programs-help-new-yorkers-lower-home-heating-costs-increase-energy

and best coordinate transmission and distribution systems.[14] In alignment with the direction of the EIDP, the CES Procurement Review aims to adopt an integrated and cost-effective approach to the State's procurement processes to ensure the State's clean energy goals are met in an affordable, cost-effective, reliable way. Staff recognizes that the Commission's consideration of the recommendations within this White Paper should ultimately align with any subsequent actions from the CES Procurement Review.

As previously noted, and as noted in the Initiating Order, the Backbone was conceptualized using key findings from other ongoing Commission proceedings. To ensure its safe, timely, and least-cost implementation, Staff recommends that the Backbone initiative should specifically continue to coordinate with a number of other Commission proceedings, including the CGPP, the Clean Energy Zones (CEZ) initiative, the Energize NY program, the process within the CES focused on designing a pathway to achieving the CLCPA's goal of zero emissions generation by 2040, while maintaining safe, reliable, and affordable electric service (Zero by 40 Process), and reliability processes, each of which are discussed in more detail below. As many commenters noted, there are also other planning processes not being carried out by DPS that could provide insights into the Backbone initiative, specifically modeling conducted at other agencies and the NYISO. One process includes reports conducted by the NYISO, including the NYISO Resource Outlook, the Public Policy Transmission Need (PPTN) Process, and compliance with FERC Order 1920. Stakeholders that touch on this topic in their comments include Terra Praxis, AGREE, Independent Intervenors, Momentum Power Corporation, MfN/NNY/NYECA, New York Transco, Nuclear New York, NYPA, NYISO, NY Renews, PECC, NYCP, Multiple Intervenors, New York Transco, the Joint Utilities, NYSEG/RG&E, Con Edison Transmission (CET), Constellation, Independent Intervenors, NYECC, and Clean Air Task Force (CATF). Ultimately, any work undertaken as part of the Backbone initiative should avoid duplicative processes, redundancies, and inefficiencies, both in terms of work before the Commission and other efforts being carried out throughout the State.

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[14] Case 15-E-0302, Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and Clean Energy Standard, Order Adopting Clean Energy Standard Biennial Review as Final and Making Other Findings (issued May 15, 2025) (Biennial Review Order).

The following sections discuss the key planning efforts underway with which Staff will coordinate during the development of the Backbone.

a. Coordinated Grid Planning Process

The CGPP, New York's long-term transmission and distribution planning initiative, identified nuclear generation as a key part of the most cost-effective solution to meet New York's future energy needs.[15] The process supports the Backbone through the identification of new transmission and distribution upgrades to bring the energy generated at new nuclear sites to the load centers where it is needed most. The capacity expansion model that supports the CGPP optimizes for the most economic, reliable, CLCPA-compliant generation mix for New York State. The capacity expansion model included a scenario (CGPP Scenario 2) that allowed the model to select for a high capital, low operating (HcLo) cost Dispatchable Emissions Free Resource (DEFR) that can be interpreted as a proxy for nuclear energy.[16] Under this scenario, the model undeniably demonstrated the value of nuclear generation by selecting to build five GW of new nuclear and significantly reducing the amount of additional renewables and new transmission needed to be built, as compared to other scenarios.

As numerous stakeholders describe in their comments, input assumptions in various state processes have evolved over the past three years. While the State proceeds with investment-grade modeling for the advanced nuclear and transmission facilities envisioned through the Backbone, Staff agrees with stakeholders that a key consideration will be the continued refinement of cost data and financing assumptions to produce a single source of transparent data related to the expected cost of developing a Nuclear Reliability Backbone in New York. In the Initiating Order, the Commission acknowledged the efforts underway as part of the CGPP, which considered potential pathways for nuclear and transmission deployment in New York over the next twenty years. Staff maintains the expectation that the findings and

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[15] Case 20-E-0197, supra, Coordinated Grid Planning Process: Cycle 1 Report (filed May 4, 2026), p. 48 (Cycle 1 Report).

[16] The HcLo DEFR assumptions include capital cost data from the 2024 National Renewable Energy Laboratory (NREL) Annual Technology Baseline, with fixed and variable operations and maintenance costs taken from the NYISO's Outlook assumptions, and NREL technology baseline for nuclear costs as a representative cost. Thus, it can be interpreted as a nuclear proxy resource.

future efforts in the CGPP will continue to inform policy, strategy, and investments related to the Backbone. This expectation is supported by various stakeholders in their comments, including NYECC, Invenergy, Terra Praxis, Oswego County Administrator, MfN/NNY/NYECA, NEI, NYPA, PECC, NYCP, the Joint Utilities, National Grid, the NYC, CET, Independent Intervenors, CATF, and the Long Island Power Authority (LIPA).

While the results of the CGPP Cycle 1 Report served as a starting point for the conceptualization of the Backbone, Staff expects that future cycles of the CGPP will include scenarios that reflect five GW of additional nuclear capacity on the system. However, rather than predefining nuclear facilities and new transmission options to effectuate the Backbone, Staff expects the CGPP to serve as the tool by which the Commission can identify the appropriate resource and transmission investments needed for timely and cost-effective development of the Backbone.

For these reasons, as recognized by the Commission in the Initiating Order, corresponding transmission investments should be considered through ongoing work in the CGPP and overarching EIDP to advance a Nuclear Reliability Backbone, delivering clean, firm power across the State. As further discussed below, the coordination between the Backbone, the CGPP's transmission-related investments, and any future CEZ initiative will be necessary to ensure the most cost-effective and timely outcome for the State's clean energy policy goals.

b. Clean Energy Zones

Through its CEZ initiative, the Commission seeks to coordinate clean energy and grid infrastructure development to maximize efficiency and reduce ratepayer costs while enabling further community benefits and engagement. DPS Staff filed its CEZ White Paper on May 15, 2026, exploring ways to better coordinate investment in clean generation and transmission in areas experiencing current or planned load growth, or those areas otherwise well-suited for energy infrastructure investments, while streamlining and prioritizing community engagement and collaboration.[17] Within the proposal for a CEZ program, Staff recommended that the designation of a CEZ should also consider the investments and commitments already pursued through various State programs to streamline statewide planning and development

[17] Case 15-E-0302, supra, White Paper on Clean Energy Zones Program (filed May 15, 2026) (CEZ White Paper).

efforts. This would include the Nuclear Reliability Backbone, which could overlap with renewable deployments in numerous ways and can provide complementary value to the energy system by providing baseload generation alongside large quantities of intermittent renewables. By coordinating new investments through the CEZ program, the State could maximize the significant benefits of CEZs. In their filed comments, the Joint Utilities, LIPA, Momentum Power Corporation, MfN/NNY/NYECA, National Grid, NYCP, NYISO, and PECC stress the importance of aligning the Backbone with other DPS proceedings, including the CEZ program. These commenters suggest that coordination with the CEZ program could facilitate generation and transmission planning via an integrated planning process. However, while Staff acknowledges the potential for this coordination, the CEZ concept has not yet been defined or adopted by the Commission, and no CEZs have been identified yet.

c. Energize NY Development

Announced by Governor Hochul in her 2026 State of the State address, the Energize NY Development initiative considers large loads, which are also relevant to the discussion of the Backbone. Energize NY aims to assess and modernize how large loads connect to the electric grid, while ensuring that projects driving significant system demand, such as data centers, pay their fair share of the associated costs. In response to Energize NY, the Commission initiated a proceeding to address interconnection reforms for large loads.[18] Specifically, the proceeding focuses on updates to interconnection policies, cost-allocation frameworks, and tariff structures for high-demand electric customers while safeguarding everyday ratepayers and supporting state climate goals under the CLCPA. While Staff anticipates that the proceeding will result in recommendations and potential Commission adoption on those topics, Staff also recognizes the need to balance important policy considerations in order to identify the most appropriate framework to govern large load offtake agreements with nuclear facilities. In Staff's view, these policy considerations are best addressed in this Nuclear Reliability Backbone proceeding. Large loads and new nuclear development may present a mutually beneficial opportunity for offtake agreements, whereby the load bears the cost of nuclear development

[18] See Case 26-E-0045, Proceeding on Motion of the Commission to Address Interconnection Reforms for Large Loads, Order Instituting Proceeding and Soliciting Comments (issued February 12, 2026).

rather than the ratepayer. However, Staff must balance the benefits of offtake agreements with the ability for nuclear generation to serve broader statewide objectives. While facilitating the development of new nuclear in a manner that reduces the cost of these facilities to existing customers, new nuclear generation can also meet other State objectives such as meeting reliability needs instead of predominantly serving new loads. As an additional practical consideration, many hyperscalers (i.e., digital service providers that operate large data centers) require power in the immediate future, rather than on the timeline projected for nuclear generation.[19]

Various commenters discussed the potential for large load offtakers to play a role in the development of the Nuclear Backbone, including Constellation, CATF, MfN/NNY/NYECA, National Grid, NEI, NYCP, NYECC, PECC, and Terra Praxis. While most commenters agree that offtakers could offer support in the form of upfront capital investment that would help reduce public costs and protect ratepayers, commenters also suggest that offtake agreements should be used carefully. They warn that offtaker participation risks shifting costs to other forms of public support or diluting the ratepayer benefits new nuclear generation may bring about. Several commenters also suggest limiting the reliance on large load offtakers only to initial projects and avoiding overreliance on their ability to shift costs. While the efforts of these proceedings will be coordinated as needed, Staff recognizes the benefits and risks associated with the role of large load offtakers posed by commenters and proposes that this be a topic for further analysis and process.

d. Clean Energy Standard and Zero by 40 Process

Pursuant to the CLCPA, actions taken by the Commission must align with specified electric sector targets for renewable energy and decarbonization. In 2016, the Commission established the CES to increase the State's renewable energy supply and to preserve New York's existing zero-emissions nuclear generation.[20] The ZEC program, first established as

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[19] Data centers are also subject to other considerations in New York State, for example, Executive Order No. 62 issued by Governor Hochul on July 14, 2026.

[20] Case 15-E-0302, supra, Order Adopting a Clean Energy Standard (issued August 1, 2016) (2016 CES Order).

part of the CES in 2016 and recently extended through 2049,[21] provides New York's existing nuclear fleet with the financial stability needed to continue operating and providing zero-emissions generation to the grid. The 2025 Pathways Analysis concluded that the retirement of these plants at the expiration of their current operating licenses would result in a decrease in nuclear generation capacity by 1,201 megawatts (MW) in 2030 and 2,033 MW in 2040, likely contributing to greater reliance on fossil generation while exposing the State to greater energy price volatility, reduced system diversity, and increased energy security concerns.[22] While much of this White Paper is focused on the planning and development of new advanced nuclear, the extension of the ZEC program underscores the importance of the continued operation of our existing nuclear fleet as a necessary component of the 8.4 GW Nuclear Reliability Backbone as proposed within the Initiating Order.

Following enactment of the CLCPA, the Commission modified the CES to align with the renewable energy and zero-emissions targets in the CLCPA.[23] On May 18, 2023, the Commission initiated the Zero by 40 Process focused on designing a pathway to achieving the CLCPA's goal of zero emissions generation by 2040, while maintaining safe, reliable, and affordable electric service. The Commission recognized that renewable resources alone were unlikely to meet the full range of electric system reliability needs that would arise as fossil generation is replaced and therefore commenced the Zero by 40 Process to identify technologies that can close the gap between the capabilities of renewable energy technologies and future system needs. As part of this process, DPS Staff and NYSERDA contracted with the Electric Power Research Institute (EPRI) to conduct in-depth research on candidate technologies to assess their technoeconomic potential, identify barriers to their deployment, and evaluate which technologies could help New York reach its 2040 emissions reductions target.

In 2025, EPRI and NYSERDA published their findings as a technoeconomic assessment, which identifies how early planning and regulatory engagement around new nuclear

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[21] Case 15-E-0302, supra, Order Extending Zero-Emissions Credit Program (issued January 22, 2026).

[22] 2025 Pathways Analysis.

[23] Case 15-E-0302, supra, Order Adopting Modifications to the Clean Energy Standard (issued October 15, 2020) (CES Modification Order).

could enable the deployment of multiple reactors that serve as a baseload resource in a zero emissions grid.[24] The 0x40 Assessment included evaluation of a range of candidate technologies including nuclear, hydrogen, biofuels, advanced geothermal, carbon capture and storage, long-duration energy storage, and virtual power plants. The 0x40 Assessment categorized these technologies into three types depending on the key contributions they offer to the system to meet the needs of load increase, reliability, and decarbonization: (1) low capacity factor resources (or peak load resources); (2) high capacity factor resources (or baseload resources); and (3) gap-rightsizing resources (or load shifting resources). Within this context, the 0x40 Assessment found that the characteristics of nuclear generation, with its high energy density and capacity factor, can reduce reliance on expensive peaking generation as well as on overbuilt intermittent and land-intensive renewable resources. These findings were foundational for the consideration of nuclear generation in the SEP and the CGPP.

2. Cost-effectiveness

This White Paper considers the key elements needed to develop a safe, cost-effective, and timely Backbone, and how to effectively coordinate its components to maximize ratepayer benefits in the State. The SEP provides a system benefits analysis comparing two scenarios. At the low end, with estimated new nuclear deployment of 2.2 GW by 2040 and 4.8 GW by 2050, net system benefits were quantified as $28.1 billion by 2040 and $47.2 billion by 2050. At the high end, with nuclear deployment of 3.3 GW by 2040 and 5.6 GW by 2050, the system benefit was projected to be $31.1 billion by 2040 and $54.2 billion by 2050, relative to a baseline of decarbonizing the grid without nuclear. Staff notes that the SEP only assessed a time horizon through 2050 and therefore omits subsequent system benefits over the full lifetime of the nuclear generation assets. The SEP analysis estimated annual system benefits in the year 2050 to be between $2.89 billion and $3.94 billion per year (in 2024 dollars), and these benefits can be taken as an indication of the level of annual system benefits beyond 2050.

[24] New York State Energy and Research Development Authority, "Zero by 40 Technoeconomic Assessment, Final Report," prepared by Electric Power Research Institute (2025), available at: https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Publications/Energy-Analysis/Zero-x-40-Technoeconomic-Assessment.pdf (0x40 Assessment).

The SEP also assessed multiple scenarios to show future energy pathways for New York State. This analysis considered how the State's energy supply and delivery systems can meet forecasted needs through 2040 and beyond. The modeling carried out detailed analysis to compare scenarios with and without new nuclear, using the evaluation of the five scenarios described above, and results included an estimation of impacts to system cost. New nuclear was included as a candidate resource in each of these scenarios, with new nuclear capacity being selected by the model if found to be economic. The Current Policies and Additional Action scenarios included variants and the associated transmission needs. These pathways included the option for the model to build up to 2.2 GW (Current Policies) and 3.3 GW (Additional Action) of new nuclear by 2040. Across the variants and based on its least-cost optimization approach, the model chose to build the maximum amount of nuclear allowed by 2040 with additional builds in the 2040s reaching between 4.8 GW and 5.6 GW of new nuclear by 2050, coupled with new transmission.

Although the time-of-build for transmission and the quantity of accompanying renewables varied, new nuclear paired with transmission enhancements was a critical component of meeting policy goals at the least cost in all pathways. With the inclusion of new nuclear, the analysis estimated a reduced system cost of between $20 billion and $31 billion compared to the core cases without new nuclear in 2040, growing to between $47 billion and $54 billion by 2050. The results indicate that new nuclear can support a zero-emissions grid and demonstrate that the availability of nuclear resources can help to lower system costs compared to scenarios where no nuclear is available. Furthermore, the analysis indicates that new nuclear can be a solution to support a zero-emissions electric grid alongside renewables and storage, accompanied by additional transmission to deliver part of its power to meet downstate load.

Additional modeling completed as part of the CGPP shows that the deployment of five GW of new nuclear power in New York could reduce the need to overbuild new renewable resources to meet the States clean energy goals by around 20 GW, while eliminating the need for three GW of transmission investments. The analysis also saw the elimination of the need for 15 terawatt-hours of gas generation in 2040 that was retained in the Draft SEP results under

constrained renewable deployment assumptions with no new nuclear additions.[25] Specifically, under CGPP Scenario 2, the capacity expansion model selects five GW of new nuclear due to the low operating cost of the resource, the ability to provide a significant portion of energy needs, extremely low land use intensity, and a high firm capacity as a percentage of nameplate. As a result, the total amount of additional large-scale renewable energy resources required to achieve policy targets is dramatically reduced as compared to the scenarios with no new nuclear. Relatedly, this scenario also reduces the need for new local transmission as compared to other scenarios. However, additional dispatchable resources beyond new nuclear are still required to provide daily cycling to match load and maintain reliability. Without the option to select new nuclear, the model shows a significant need for new energy generation, capacity, transmission, and as a result, additional land use, as early as 2035, including 20 GW of additional renewables and three GW of additional transmission. Importantly, these results are robust against changes in load forecasts and nuclear costs, as shown by the companion modeling completed as part of the 2025 SEP.[26]

These savings result in a potentially lower total cost of policy achievement, while lowering statewide emissions and dramatically reducing fossil fuel use. A reduction in total capacity needs also reduces the total energy-specific land-use requirements by over 200,000 acres (not including energy storage or transmission siting), which is an area larger than the footprint of the five boroughs of New York City. Lowering the total number of projects that must be deployed to advance progress towards the CLCPA targets also improves the feasibility of the State's decarbonization plans by eliminating hundreds of interconnection studies and permits, while lowering administrative costs significantly. In short, there are significant potential environmental, health, cost, and timeliness benefits related to the deployment of nuclear energy relative to the alternative generation options under all scenarios.

In both the CGPP and SEP modeling, the optimal energy system buildout included an expansion of the existing transmission system to provide additional capacity into the

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[25] State Energy Planning Board Meeting Presentation (June 25, 2025), p. 23, available at https://energyplan.ny.gov/-/media/Project/EnergyPlan/files/BoardMeetingSlides-62525-FINAL.pdf.

[26] See 2025 Pathways Analysis.

downstate region, particularly into NYISO Zone J. Specifically, given the additional constraints and challenges in terms of both decarbonization and reliability in New York City, as well as the space and grid limitations within NYISO Zone J, transmission to deliver clean reliable power into New York City provides significant value to ratepayers and the electricity system. Additionally, resources such as green hydrogen that were previously considered as potential reliability resources in downstate areas are now considered to have a very low probability of deployment during the relevant time horizon.[27]

While new nuclear is part of the most cost-effective path for New York's clean energy future, supportive programs will be needed. The Options Paper explained that the public cost of supportive programs to enable five GW of new advanced nuclear deployment could range from around $15.4 to $23.9 billion in total over the first 25 years of the operation of these plants, depending on the pace of development and selected technologies.[28] The Options Paper also identified a range of policy variants that could influence the public cost, such as a state equity stake or upfront grants. The analysis set forth in Appendix D of the Options Paper indicated that, depending on the combination of intervention options, the cost projection range could be reduced by up to 29%. Costs were also projected to be lower depending on the type of site used for deployment, with costs at brownfield sites projected to be up to 19% lower than in the base cost range expressed above which assumed greenfield sites. While significant, these projected costs should be considered within the context of the system and societal benefits that new advanced nuclear projects can be expected to unlock. Quantifying system benefits is a critical consideration since it recognizes that the costs of one technology – in this case, advanced nuclear – should not be assessed in isolation. Rather, such analysis compares the cost of meeting New York's energy system needs with advanced nuclear to the alternative without.

3. Safety

Staff affirms that the responsible deployment of advanced nuclear in New York must be centered on maintaining strong safety principles while ensuring regulatory approaches

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[27] 0x40 Assessment, p. 57.

[28] The public cost estimate assumes net present value (NPV) for the deployment of a new reactor at a greenfield site and under base case assumptions. Further information regarding these assumptions can be explored in Appendix D of the Options Paper.

address new designs and novel deployments. As stated, several reinforcing workstreams support the development of the Backbone, including the studies within the Master Plan. The Regulatory Issues and Safety Study prepared by NYSERDA and DPS as part of the Master Plan offers the full extent of analysis, findings, and recommendations to contribute to a comprehensive and safe roadmap for advanced nuclear development in New York. Staff recognizes concerns from commenters such as Rockland Audubon, LEAF Hudson Valley & Munsee Grassroots Energy Project, Alliance for Nuclear-Free New York, AGREE, Promoting Health and Sustainable Energy, and various individuals regarding the safety of nuclear energy, and maintains that protecting public health and safety through reactor safety oversight, radiation protection, environmental surveillance, security, and emergency preparedness is paramount. Staff also directs any interested stakeholders to the Regulatory and Safety Issues Study within the Master Plan. The comments filed by Nuclear Communities, Oswego County, Terra Praxis, Central and Northern New York Building & Construction Trades Council, NRDC, and other stakeholders in this proceeding acknowledge that new advanced nuclear requires stringent safety regulations and certifications, and recognize that New York has experience in the safe and responsible operation of nuclear reactors.

Protection of public health and safety in the nuclear context is carried out through a coordinated federal, state, and local framework. The U.S. Nuclear Regulatory Commission (NRC) maintains the authority to ensure that commercial nuclear power plants in the United States operate safely and do not pose undue risks to the public. To fulfill this responsibility, once a reactor is licensed and operating, the NRC maintains continuous oversight through its reactor oversight and inspection programs. States lead off-site radiological emergency planning and response, including radiation monitoring, coordination of protective actions, and oversight of training and exercises while operating within the bounds of federal authority. Local governments, particularly counties, implement emergency plans on the ground by managing public warnings, evacuation or sheltering actions, first responder support, and public communication during any incidents.

The Radiological Emergency Preparedness (REP) Program, administered by the New York State Division of Homeland Security and Emergency Services' Office of Emergency Management, coordinates with state agencies, counties hosting nuclear facilities, and nuclear power plants to ensure emergency response capabilities. The REP Program purchases,

maintains, and calibrates radiological detection equipment and coordinates Joint Information Centers for emergency communications for New York's operating nuclear plants.

At the local level, emergency preparedness responsibilities typically include broad coordination among county emergency management offices, public health departments, law enforcement, fire services, emergency medical services, and school districts. Redundancies and backup staffing and systems are key components of local preparedness and planning. Counties must maintain alert and notification systems, conduct public education activities, and ensure that trained personnel and equipment are available to support emergency response actions. Local governments also play a key role in integrating nuclear emergency planning with broader all hazards emergency management frameworks, ensuring that radiological response capabilities are incorporated into county comprehensive emergency management plans. As new reactor technologies are considered, local governments will receive additional guidance, technical assistance, and standardized planning templates to ensure preparedness requirements are appropriately scaled while maintaining public protection.

Nuclear regulation also extends beyond licensing and operation to the end of a facility's life (typically 60–80 years). When a reactor permanently shuts down, federal rules require the licensee to remove the fuel, submit a post-shutdown decommissioning plan, and dismantle the facility to standards that permit release of the site, a process that must be completed within 60 years of permanent cessation of operations unless the NRC approves an extension. At this stage, the Commission maintains supervisory authority over retired reactors and requires financial assurance and site-restoration commitments, as reflected by the ongoing decommissioning of Indian Point.

Regarding waste, the federal government regulates storage and transportation of spent nuclear fuel and high-level radioactive waste and is responsible for its permanent disposal. New York State currently hosts nuclear waste inventories across operating, decommissioning, and cleanup sites. Spent Nuclear Fuel (SNF) remains stored at the State's operating reactor sites and at Indian Point, while vitrified High-Level Waste (HLW) from historical reprocessing remains stored at West Valley pending development of a federal disposal pathway. Operating reactors will continue adding to the State's SNF inventory as long as they remain in service. Dry-cask storage has been safely used for decades and provides a proven, secure, interim storage solution for SNF while permanent federal solutions are developed.

Indian Point's safe and timely transition to onsite dry cask storage (about 127 casks), and the 25-member Indian Point Decommissioning Oversight Board, give the State a working model of multi-agency oversight coordination that can be applied to advanced reactor sites. The West Valley Demonstration Project, also in the decommissioning process, has successfully vitrified more than 600,000 gallons of liquid HLW into 278 canisters. These examples reinforce confidence in New York State's ability to handle future nuclear waste responsibly.

4. Adoption of the Nuclear Reliability Backbone

Advancing the State's clean energy goals will require contributions from a variety of sources and no single technology or resource will suffice. Nuclear energy will be an essential contributor and provides unique benefits to our electric grid as a HcLo resource. Staff finds that the need for early and proactive coordination with other proceedings, the cost effectiveness of new nuclear as compared to the alternative decarbonization pathways, and the State regulatory constructs in place to ensure the safe deployment and operation of new nuclear warrant the Commission adoption of the Nuclear Reliability Backbone. Various stakeholders offered general support for advanced nuclear energy and the adoption of the Backbone in their comments, including education stakeholder groups, towns, cities, and villages, upstate regional businesses, environmental advocacy groups, utilities, and industry. Staff further recommends that the Commission, in adopting the Backbone, find that State support is justified and take prudent measures to provide such support. While the system, economic, and environmental benefits of the Backbone are significant, Staff also contends that it is necessary to proactively structure public support to lower costs and improve viability as a material benefit for New York State ratepayers.

Financing and Commercial Viability

The Initiating Order posed a series of questions regarding the barriers to the commercial development of advanced nuclear, as well as what intervention options may be available and appropriate for the Commission and the State more generally to implement to address these barriers. The Options Paper assessed such policy interventions available to the State to support grid-scale advanced nuclear projects, including revenue support mechanisms, the potential involvement of third-party offtakers, partial state cost overrun guarantees, state or

utility equity participation, and pre-Final Investment Decision (pre-FID) grants or loans. These options were each examined with the objective of enabling project viability while minimizing expected costs and risk exposure to the public. The Options Paper found, and Staff agrees, that no single mechanism is likely to address all potential barriers to deployment, and that an integrated framework that addresses development risk, construction risk, and revenue sufficiency would be necessary together. However, Staff finds that the full package of support options to enable the commercial viability of an advanced nuclear project cannot be borne solely by ratepayers, though these additional support components can serve to lower overall costs and, by extension, any ratepayer support.

Staff also recognizes that the federal government plays an important role in the financing of advanced nuclear projects. In particular, the Department of Energy's Office of Energy Dominance Financing (DOE-EDF), which manages federal loan guarantees and direct financing for large-scale energy infrastructure projects, and the Federal Financing Bank (FFB), which provides financing to help Federal agencies manage their borrowing and lending programs, offer attractive funding opportunities for projects. While federal financing is an important and complementary support mechanism, the following section focuses on the range of State policy mechanisms necessary to enable the commercial deployment of advanced nuclear.

5. Pre-FID Finance

The Options Paper identified barriers to the commercial viability of a nuclear project across the three phases of development: (1) early development activities leading to FID; (2) construction leading to commercial operation; and (3) operation. An advanced nuclear project requires meaningful early-stage work before FID to address regulatory and technical issues, including site characterization, licensing preparation, preliminary design, Engineering, Procurement & Construction (EPC) contract negotiation, and deposits on long-lead items. For an initial GW-scale project, these costs may amount to hundreds of millions of dollars. The Options Paper noted that this presents a challenge for advanced nuclear projects, because financing becomes more readily available at FID (meaningfully in the form of construction finance), but substantial costs must be incurred to reach that point, and project uncertainty limits the availability of affordable private finance.

For pre-operations finance, pre-FID funding needs may be addressable under newly-announced initiatives. For example, the DOE-EDF recently announced an initiative using

the AP1000 as the main large-scale technology candidate.[29] Additionally, some smaller-scale technologies have expressed confidence that they could raise the amount of relatively lower pre-FID funding they require through IPOs.[30] In Staff's understanding, some offtakers have also indicated that they may be willing to invest development capital into advanced nuclear technology or project development companies, some of which might then be available for pre-FID project costs. Numerous commenters agreed that pre-FID spending presents a significant barrier to commercial viability. Constellation and Terra Praxis suggested these costs may exceed the Options Paper's estimates. Others, including PECC, CATF, and MfN/NNY/NYECA, recognized the benefits of pre-FID interventions but cautioned against overextending public support.

The Options Paper suggested that clarity on the State's policy framework and early support awards to individual projects could help unlock pre-FID private finance. The Options Paper found that direct government financial support for the pre-FID period, in the form of grants, government bridge loans, or a level of backstop for private sector finance, can have a meaningful impact on project viability and overall costs. For example, one scenario analysis in the Options Paper estimated that a $160 million pre-FID grant could reduce total public cost by approximately $600 million. The Options Paper also provided a broader assessment of the potential role of grants at later project development stages; it found that construction grants, like state equity, can materially reduce public cost. The analysis observed that the timing of the grant is important, with pre-FID grants being more efficient than grants awarded later in the project development cycle because they avoid more private sector finance carrying costs. However, grants are moderately less efficient than equity of the same size because equity is ultimately repaid.

As with a cost overrun guarantee and State equity, any pre-FID support would first require an identified funding source. While NYSERDA has allocated funding from the

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[29] Department of Energy, "Department of Energy Announces American Nuclear Supply Chain Loans" (June 23, 2026), available at: https://www.energy.gov/articles/department-energy-announces-american-nuclear-supply-chain-loans.

[30] For instance, X-Energy was recently reported to have raised $1 billion through an IPO. See X-energy, "X-energy Reports First Quarter 2026 Results" (June 2026), available at: https://x-energy.com/news/x-energy-reports-first-quarter-2026-results.

Renewable Greenhouse Gas Initiative for the purposes of community capacity building and early-stage project development, any support the State plans to extend beyond that, whether in the form of grants, loans, or credit enhancements, would require funding identification.

Where support is extended, it could be structured so that public funds are committed only as projects demonstrate progress and viability, tying disbursement against defined development milestones or other requirements. Repayment provisions would further protect public funds, dictating that support be repaid if a project reaches FID, when construction finance becomes available, or recovered if a project is abandoned for reasons withing the developer's control. Repaid or recovered funds could then be recycled for later projects.

As an alternative or complement to direct support, the State could offer a backstop or other types of credit enhancement for private pre-FID lending. The Options Paper identified this type of State-backed financial assurance as a means of unlocking private bridge finance because it would reduce early-stage project risks that might otherwise deter private sector lenders. A backstop could unlock access to private bridge finance without an upfront outlay of public funds, since the State would bear losses only if the project was unable to repay its private sector funders. Since pre-FID private funders would typically expect to be repaid upon the project reaching FID, in practice, the State backstop would be called upon if the project fails to reach FID. Given these dynamics, any such backstop should therefore be capped at a defined level, so that the State's exposure is limited and transparent at the time of commitment.

Several commenters, including Breakthrough Institute, Terra Praxis, and Holtec International (Holtec) indicated support for the State taking on common early-stage work and respective costs, such as identifying and characterizing candidate sites, rather than leaving it to individual developers. Additional commenters, including MfN/NNY/NYECA, CATF, and PECC proposed limits on the scope, timing and reimbursement of costs.

6. Cost Overrun Guarantee

The Options Paper identified cost overrun risk as the most prominent financial risk likely to be addressed. Addressing cost overrun risk requires two critical strategies: first to minimize that risk, and second to optimally allocate the risk that remains.

Established practices to minimize risk include reliance on stable designs and plans, optimal site selection to take advantage of existing infrastructure, and reliable and adequate supply chains and workforce. Established practices also call for the application of

project management best practices and generally of lessons learned, drawn from recent developments such as the Vogtle projects and other large infrastructure projects. Established practices further call for allocation of risk so that all key participants in the project have "skin in the game" and sufficient incentive to take all feasible steps to contain and remedy adverse project developments.

Second, and as discussed in depth in the Options Paper, risk allocation that addresses cost overrun exposure can improve the financial risk of the project and thus meaningfully lower project costs. Where government participates as an equity holder, it would be expected to bear a proportionate share of cost overrun exposure. Additional methods to allocate risk of a cost overrun include: (i) a potential offtaker contributing to risk allocation (e.g., through a ratchet in power purchase agreement (PPA) levels); (ii) use of insurance companies to potentially insure a level of cost overrun risk at a manageable cost level; and (iii) other project partners such as EPC providers, who may be able to contribute to sharing the risk. In addition, the Options Paper considered that the State could take on a portion of remaining risk to help secure and reduce the cost of private sector finance.

The Options Paper noted that before the State could extend any cost overrun guarantee, a funding source would need to be in place, even if it is never drawn upon. Once a source is identified, a defined template for allocating cost overrun risk would need to be developed, so that procurement can proceed from a consistent framework and the State's position on risk is clearly defined. Such a structure would establish the scope of covered risks, eligibility conditions, expected level of risk to be borne by other project partners, and sequencing of which party would be expected to bear risk in what order. Placing the State late in that sequence would help ensure the parties that are best able to control costs would absorb the first overruns and retain a strong incentive to prevent them. As a starting point, should State or State-backed equity be extended, the Options Paper expected the State to bear the portion of any cost overruns that corresponds to its equity share, as any equity holder would. That exposure would arise from the State's ownership position and would be distinct from a guarantee.

The Options Paper further noted that any partial State coverage of overruns that would otherwise fall to private equity should be subject to defined thresholds and clear conditions. These should include requiring the application of construction and project management best practices to reduce the likelihood that the guarantee is called upon. The State

should also require defined forms of oversight over projects so that emerging cost or schedule problems are identified early, and visibility is maintained into the State's exposure. A guarantee could also be accompanied by an upside sharing arrangement beyond that embedded in any State equity stake, such as reduced payments where actual costs come in lower than projected, or a share in future deployment by project partners. The exposure of that equity to construction risk, and in particular cost overrun risk, is a key challenge that needs to be addressed. Due in part to cost overrun risk during construction, private sector equity capital may be unwilling to invest, or might only invest at hurdle rates that projects cannot realistically meet, without significant financial risk sharing with other parties.

Commenters were divided on whether a State cost overrun guarantee is needed. For example, MfN/NNY/NYECA argued that a cost overrun guarantee responds to a structural gap in construction finance, and funds providing base construction equity are not well suited to reserving capital against a possible overrun, so contingent equity may need to come from other sources, including government. In MfN/NNY/NYECA's view, the key question is not whether enough construction equity exists, but whether a credible contingent-equity layer will remain available if a material overrun occurs. NEI supported a partial guarantee as a means of addressing risks that cannot be efficiently priced solely through private markets. Constellation stated that a cost overrun guarantee would bring much greater confidence to the project as a whole and broaden the range of capital providers and participants. Other commenters questioned whether a guarantee is the right instrument. The Breakthrough Institute recommended against a cost overrun guarantee, arguing that it creates a misaligned incentive for utilities and the developers. Multiple Intervenors argued that recovery of cost overruns should not be guaranteed, noting that the Options Paper did not quantify the potential public cost of a cost overrun guarantee.

Commenters who addressed the design of a cost overrun guarantee broadly agreed that it should be limited. NEI recommended a disciplined, negotiated, milestone-based tool rather than an open-ended assumption of project risk. Holtec recommended reserving State support for defined high-impact risks, policy or regulatory changes, force majeure, or cost bands above negotiated private first-loss thresholds, and that any State participation should be capped or subject to further authorization. NRDC recommended hard dollar and percentage caps,

defined private-loss layers before public exposure, termination rights, and milestone-based disbursements for any cost overrun guarantees.

Regarding the timing and scope of potential partial State cost overrun guarantee, PECC recommended that the boundaries of any cost overrun support be established as clearly as practicable before construction begins, including what level of cost contingency remains within the project budget, what risks remain with private project participants, what threshold must be reached before public support is available, and whether coverage applies to all overruns or only specifically defined categories. National Grid argued that customers should not serve as the default backstop for cost overruns, schedule delays, technology failures, or project cancellations, but instead suggested that technology risk should remain with the technology provider and developer, while construction risk is covered by the EPC and developer.

7. State Equity

The Options Paper expected the default business model for new advanced nuclear projects to be private project finance, with equity provided by specialized private infrastructure investors. Alternatively, or complementarily, a State equity stake could be made available at lower cost than private equity and help reduce the hurdle rate for any remaining private equity, lowering total project costs and public support needs. Regardless of whether a State equity stake could be at a minority or majority level, the Options Paper maintained the expectation of private sector "skin in the game." A State equity stake could either be retained after commercial operation or be sold at the Commercial Operation Date (COD).

Regarding State equity, National Grid emphasized the importance of State oversight and advocated for majority or even sole State ownership, coupled with a project finance approach to limit State and ratepayer exposure. MfN/NNY/NYECA agreed with the potential benefit identified in the Options Paper of offering relatively low-cost public investment capital to replace higher-cost private sector equity, and in particular, favored pre-FID investment or post-FID investment in the form of contingent equity (i.e., equity effectively in the form of cost overrun cover).

The design of any State or State-backed equity component would first require the determination of the entity or entities that would hold the stake. The Options Paper identified NYPA, NYSERDA, a new subsidiary modeled on the New York Green Bank, or a new State entity as possible holders. As outlined in the Options Paper, Staff does not expect that a State

entity taking a stake would be exposed individually to investment risks. Instead, this entity would act as a conduit for more general State backing for risks associated with equity ownership. The terms of any funding instruments, such as bonds, would further define how risk is shared. Whether the stake would be retained after commercial operations – allowing the State to capture long-term revenue – or sold at that point to provide early repayment would also need to be determined.

Relatedly, the size of the stake and the controls associated with it must also be considered. A larger share would reduce project cost but increase public exposure. Staff agrees with the conclusion in the Options Paper that a sole State stake is not viable. The Options Paper noted that debt provided or facilitated by DOE-EDF and the FFB has committed to high levels of financing at favorable terms for early projects and may cover up to 80% of the overnight capital cost of initial projects. That would leave an equity requirement of at least 20%, or what is estimated to be approximately $2 billion, for a GW-scale project. The level of control and oversight accompanying the stake would also need to be determined and could range from information and audit rights to board representation and consent rights over major decisions. The terms under which State equity bears risk and receives returns, including to what extent it would cover cost overruns and share in upside on the same basis as private equity, would also need to be defined, as would the funding source for the stake (e.g., through State appropriations, revenue-backed bonds issued by a State authority, or other means). Staff expects that debt from DOE-EDF combined with State equity will play a critical role for initial projects. As the Option Paper noted, such debt may be focused on more mature designs, and State support policies and awards could strengthen a project's credit standing. Private sector debt is expected to become a viable alternative as the market matures.

Commenters generally supported a role for a State equity component, but differed on its scale and the conditions that should attach to it. For example, CATF supported a State or State-backed minority equity stake in initial projects to lower the blended cost of capital and reduce reliance on above-market revenue. PECC observed that State equity can provide power-cost capital and allow the state to retain direct economic benefit, but should include clear limits on public exposure. The New York Energy Alliance proposed a stake of around 10%, which would allow the State to audit projects and allocate at-cost power. Other commenters favored a larger public ownership role. MfN/NNY/NYECA recommended that NYPA should hold an

ownership stake in the State's GW-scale anchor project and develop the institutional capability needed to oversee a multi-project nuclear program. National Grid proposed State-backed majority or sole ownership of any new nuclear facilities, subject to federal risk sharing, fixed price construction contracts, ring-fenced financing and independent cost, and schedule oversight**.** Holtec suggested that the State should not presume private equity to be the default owner but that a public-power owner with an integrated private delivery team could be an equally valid model.

The Options Paper offered preliminary thoughts on whether investor-owned utilities, instead of or in addition to a State entity, could serve as a further channel for lower-cost equity. Comments on this topic were primarily received from utilities, who emphasized that if this approach (including, relatedly, utility PPAs) was pursued at all, it should be only on a voluntary basis rather than imposed on utilities. For example, the Joint Utilities opposed mandatory utility-owned generation via PPAs for assets that the utility in question would not control. National Grid agreed with the Joint Utilities' opposition to mandatory utility PPAs or ownership, while NYSEG and RG&E expressed openness for utility-owned generation as an option for utilities (in the form of a regulated asset model with cost recovery subject to Commission decision) and suggested combining utility ownership with a role for NYPA. Relatedly, PECC expressed the view that, if utility ownership is pursued, this should include utility risk exposure, not just a pass through to ratepayers.

Utility ownership could take on a role potentially relevant to the full range of key issues discussed here – as a form of equity, as a way of implementing risk sharing among parties including potentially a public share of risk, and/or as a form of revenue support. This White Paper recognizes that the topic of utility ownership has a long history in New York, dating back as far as clean energy procurement in New York to the initial stages of the development of the CES. The topic continues to be under review, currently as part of the CES Biennial Review process. This White Paper therefore does not advance a specific recommendation on utility ownership but rather recommends that the Commission, as part of its ongoing review on the topic, consider its impact on the approach to nuclear procurement.

8. Establishment of Revenue Support Program

The Options Paper identified output-based revenue support mechanisms as a potential option to provide above-market revenue needed to make projects viable and applied the term Advanced Nuclear Zero Emission Credits (ANZEC) to support new advanced nuclear

projects. While the Options Paper characterized ANZECs as conceptually similar to existing ZECs and similar instruments, it did not express views on the specific design approach to such an instrument but rather emphasized the nature of this type of support as providing above-market revenue to projects. The Options Paper analysis provides important insights on the relationship between this type of support and the pre-FID and construction support options summarized further above; it found that relying on ANZEC revenue support in isolation could result in higher ANZEC costs, compared to using ANZECs as part of a broader support package that includes such complementary interventions. The Options Paper also recognized that the voluntary purchase of clean energy credits or PPA offtake by private sector parties could reduce program costs for ratepayers

The Commission has long supported clean energy investments through the use of above-market revenue mechanisms, such as compensating clean generation projects through the CES for the system and environmental benefits of these technologies.[31] Notably, this type of support follows a well-established principle for support to be contingent on project success: revenue support is paid *only* once a project has been completed and is delivering energy and system benefits. In Staff's view, a similar mechanism of ratepayer support would be appropriate in the context of a Nuclear Reliability Backbone. Staff agrees with the many commenters, including CATF, Independent Intervenors, Independent Power Producers of New York, LIPA, Multiple Intervenors, NRDC, and New York Renews, who emphasized the importance of maintaining this principle for ratepayer commitments. As already discussed above, given the broad and economy-wide benefits of a Nuclear Reliability Backbone, it is also appropriate to examine sources of funding beyond New York's electric ratepayers, including upfront grants, State equity, and cost overrun protection.

Staff notes that various revenue support program design aspects were not examined in detail in the Options Paper. The implementation of a nuclear revenue support program would require detailed consideration of implementation issues such as: (1) periodic procurement targets; (2) coordination of procurements across resource types, and with transmission investments; (3) Statewide load sharing ratepayer cost share through load serving entity obligations; (4) duration of revenue support contract and arrangements applicable after the

[31] See 2016 CES Order and CES Modification Order.

initial duration of revenue support expires; (5) contract periods and NYSERDA administrative costs; (6) impacts on disadvantaged communities; and (7) impacts of any bilateral third-party offtake agreements.

The Options Paper noted that CES programs have incorporated voluntary purchases of clean energy attributes to allow individual parties to procure them directly and reduce program costs for ratepayers, and that the same reasoning would hold for voluntary ANZEC sales or incorporation of offtaker PPAs. The Options Paper also identified important tradeoffs regarding some types of large electricity load customers, particularly hyperscale data center developers. Numerous stakeholders weighed in on the issue of large loads and third party offtakers, as discussed above in Section 1(c).

Commenters recognized the importance of the opportunity to mitigate the need for public revenue support through private sector offtake. Some commenters see third party offtake displacing even the majority of State revenue support, though few advocate its use exclusively. However, as stated earlier in this White Paper, commenters also raised concerns regarding data center offtake increasing costs to others, and that any offtake dedicated to large loads may not serve the broader system and reliability benefits that the Backbone intends to provide. The Backbone implementation process should consider whether to limit the share of a project's output dedicated to individual offtakers, and whether the nature of offtakers (e.g., local economic benefits) makes a difference in this respect.

While it is premature to establish clear-cut guidelines on topics relating to hyperscaler third-party offtake identified in the Options Paper and further discussed by commenters, Staff finds it timely and appropriate to establish some principles for the development of such guidelines. First, Staff proposes that third-party agreements for the offtake of the output of Backbone projects should result in economic support for the project that demonstrably and meaningfully reduces the cost to other ratepayers. Second, such third-party agreements should be limited to amounts that ensure the intended contribution of these facilities to Statewide resource adequacy.

Regardless of any offtaker agreements, ratepayer support will likely still be required. While this White Paper recommends that ratepayer commitments should be limited to performance-based revenue support that only materializes once projects successfully begin operation, this does not mean that such a revenue support mechanism would necessarily be fully

divorced from certain development and construction risks. As the Options Paper recognized, programs under the CES already incorporate certain elements of flexibility that respond to changes to factors such as inflation, change in supply chain costs, and other factors. This White Paper recommends that this type of feature should be considered during implementation to ensure appropriate performance incentives are established for each project partner and risk is shared between partners, including the State in a way that reflects each partner's role. Risk sharing more generally is discussed further in the next section and will need to be a core part of the implementation and subsequent procurement process.

The Options Paper explored a possible cap on ANZEC-type support to balance it with other potential types of support including upfront grants. However, the Commission has not, to date, pursued such a rigid approach in other parts of the CES. This White Paper therefore does not recommend a cap but instead recommends that NYSERDA and DPS Staff continue to consider the concept as part of the Backbone implementation process.

9. Integrated Support Framework

In combination with the benefits of a successful and timely deployment of the Backbone, the findings in the Options paper make a strong case for justifying State intervention aimed at the key barriers to commercial viability. This justification is based on two principles: (1) designing State support as an integrated package of multiple components that mutually reinforce to increase effectiveness of the interventions and reduce costs; and (2) designing State support in a complementary way such that it balances private sector action to reduce the cost of public sector support with the need to ensure that public sector goals and benefits are achieved. As expanded on in the Options Paper, public support for new advanced nuclear could take several forms, including: (1) above-market revenue support; (2) a partial State cost overrun guarantee to address construction risk; (3) State or utility equity participation; (4) construction grants; (5) federal construction debt; and (6) pre-FID support through grants, loans or a backstop for private lending. Staff submits that, when combined with strong project and proposer eligibility standards and cost and risk management approaches, a portfolio comprising all or most of these financial tools offers the best prospect of a successful, cost-effective grid-integrated Nuclear Reliability Backbone.

Each form of financial support shifts costs and risk differently between developers, project partners, and government. For example, revenue support mechanisms

structured as an indexed energy price contract would shift revenue market price risk from the project developer to the ratepayers, but because the developer would be paid only for energy delivered once the facility is operating, project construction risk would remain with the developer. A partial cost overrun guarantee would shift a portion of construction risk to the State, and State equity would expose the State to project performance risks. Construction grants, if they are fixed in amount, would help avoid State responsibility for overruns for a State equity portion, but would function as an upfront cost without repayment. Pre-FID grants and loans would shift a portion of development risk to the State, although there could be conditions for repayment if the project does not reach FID.

The Options Paper found that a portfolio of support components will need to be developed to make these projects as investable and cost-effective as possible (to minimize customer burden) and structured to mitigate and manage risk as optimally as possible, such as by preserving private incentives to deliver on time and on budget. Staff also recognizes a need to assess the role private insurance could play in any project package and, if utilized, how much risk private insurance or comparable instruments can absorb. Additionally, the role of federal, multistate, and other third-party contributions could play a factor in package development. Staff acknowledges that the engagement with and inclusion of additional parties brings added complexity to what are already complex multi-party negotiations, but additional third-party contributions could reduce the State's overall exposure to project risks and should be considered. Various ownership and financing arrangements affect how much federal tax credit value a project can realize, and Staff will need to weigh these and other arrangements with a view of maximizing the benefits to New Yorkers.

A number of commenters endorsed the key observation in the Options Paper to pursue an integrated approach across the options, rather than viewing them as mutually exclusive. For example, PECC recognized this integrated approach of a range of interventions, each helping to reduce overall cost but also raising the potential for public sector risk exposure. Holtec supported an integrated intervention approach of pre-FID support, low-cost equity, cost overrun risk sharing, and ANZECs. NY for Clean Power also supported an integrated support package of all the components. Other commenters such as Constellation, Cornell NiCE and Cornell ANS, MfN/NNY/NYECA, National Grid, NEI, Nuclear Communities, NYCP, NYECC, NYPA, PECC, and Terra Praxis, broadly agree on the barriers presented in the Options Paper

and the need to address them through government intervention versus private sector action, suggesting that the Options Paper identified the appropriate range of policy options. Commenters also noted that the policy options can complement one another to help overcome barriers to deployment that the private sector may not be positioned to address while minimizing exposure to costs.

Therefore, Staff recommends that the Commission direct it and NYSERDA to design the comprehensive revenue support program that enables inclusion of each of the non-revenue support components, namely State equity, a State role in limited cost overrun risk sharing, and pre-FID support such as grants, loans, or credit enhancements.

Procurement

The Initiating Order posed two questions regarding the procurement mechanism that the State should pursue in the development of a Nuclear Reliability Backbone. These questions encouraged Staff and stakeholders to deliberate on what procurement mechanisms should be used to achieve a cost-effective, timely, and grid-integrated Backbone that appropriately manages risk. The Initiating Order also invited Staff and stakeholders to evaluate a competitive solicitation process as compared to a competitive negotiation process, and the role for a pre-qualification process to screen developers, technologies, and project proposals against defined eligibility standards before entering procurement. In addition, the Options Paper discussed several fundamental features of large-scale nuclear energy that make the procurement of major nuclear projects an inherently complex, highly negotiated undertaking. Procurement requires an integrated approach spanning multiple support components across pre-FID, construction, and operational stages, alongside the potential involvement of actors beyond New York State, including the federal government, other states, and offtakers.

Based on the information received on the record to-date, Staff first recommends developing and establishing a pre-qualification process to offer the opportunity for initial screening of the various components of an advanced nuclear project and of any advanced nuclear proposal. Second, to enable cost control and implement adequate risk management measures, Staff recommends that procurement should take the form of a competitive, open-book process. Staff also acknowledges that the procurement of new advanced nuclear will be meaningfully different from current large-scale clean energy projects in New York State and therefore

recommends that certain conditions must first be met before the procurement of any nuclear project can begin. Staff recommends developing an advanced nuclear Procurement Framework that reflects these principles. The following section sets out the range of considerations that the implementation process would need to resolve to ensure the state is ready to procure the Nuclear Backbone in a cost-effective and timely manner.

10. Eligibility Standards and Pre-qualification Process

Clear eligibility standards, and a process for applying them, will be needed for any program of State support for new advanced nuclear. Published standards let private parties assess whether a project qualifies before engaging with State programs, while a pre-qualification process focuses State resources on the projects most likely to succeed. Together, they help ensure that supported projects align with the State's policy objectives.

The Options Paper found that, where support is awarded through competitive open-book negotiations rather than an open Request for Proposal (RFP) process, a pre-qualification process may be needed to screen developers, technology providers, and project proposals before they enter time- and resource-intensive negotiations. The Options Paper suggested that pre-qualification could also govern access to related State offerings, including access to State-identified sites and host-communities and grants for early development activities. The process could be conducted in one step or several, ranging from a preliminary screening of technology providers and developers to a more detailed assessment of specific project proposals. The Options Paper also noted that NYPA's request for qualifications for its one GW project has effectively begun the initial steps of a process of this kind. Staff anticipates that experiences and findings from NYPA's process will inform the design of the State's pre-qualification process.

Commenters that addressed pre-qualification focused on its scope, the criteria it should apply, and how it should treat different sites and technologies. Commenters broadly agreed that the core criteria of a pre-qualification process should include technology maturity, licensing readiness, developer experience, financial capability, construction and delivery capability, supply chain readiness, and workforce planning. Other commenters also cautioned that the scope of pre-qualification should be carefully managed, allowing only narrow, justified, project-specific modifications and avoiding an application so early or narrow that it precludes technologies that may become viable later.

Staff proposes the following eligibility standards to govern entry into a pre-qualification process for State support. First, eligibility for State support should apply only to new advanced nuclear generation, which the Initiating Order defined as a range of newer designs that improve on conventional reactors through features such as passive or inherent safety systems, modular construction, alternative coolants, and operational versatility. Conversely, support should not extend to power upgrades, life extensions, or other upgrades at the State's existing nuclear facilities. Those facilities form the existing foundation of the Backbone and are not part of the new nuclear capacity any new procurement is intended to deliver. Second, and consistent with the objectives of the Backbone, eligibility for State support should be limited to grid-scale power generation projects of at least 25 MW per individual nuclear generation unit (in line with the cut-off point for the siting process under PSL Article 10) and a total project size of at least 250 MW (in line with the smallest size project analyzed in the Options Paper). Micro-scale projects and non-power applications have different cost and value profiles, and the interventions recommended in this White Paper might not suit them, though further industry development and analysis may demonstrate the value of an additional dedicated State support framework. Similarly, eligible projects would need to meet a certain level of technology maturity to justify State support and control for deployment risk. The appropriate threshold will be defined through the implementation process and informed by NYPA's technology selection process. For full project proposals containing sites, eligible in-state projects would be restricted to NYISO Zones A-F, which encompass the area of New York State north and west of the lower Hudson Valley, in keeping with the established parameters of the Backbone. Consistent with CES precedent, projects in neighboring jurisdictions could be eligible where their power is physically delivered to New York.

Staff proposes that the Commission direct the development of a pre-qualification process that applies the above standards. This process can offer the opportunity for initial screening of developers, sites, project proposals, and technology readiness in advance of full project proposals. The screening criteria applied through the pre-qualification process should include a review of what, if any, feasibility enhancements can be enacted at potential sites as well as an understanding of the potential grid interconnection infrastructure and costs.

11. Procurement Framework

Procurement for the Backbone must achieve the overarching goal of delivering not just a single project, but a portfolio of projects that add up to the five GW of cost-effective new advanced nuclear that make up the Backbone commitment. As discussed, support will likely consist of multiple interrelated elements, including revenue support, a cost overrun guarantee, and State equity. Nuclear projects have long development timelines, which inherently heighten the risk of adverse developments and require increased durable risk management and risk allocation. The state of the technology adds to that exposure: newer nuclear technologies are still under development and have not been deployed commercially, while more established technologies like Large Light Water Reactors (LLWR) still present high levels of project risk.

RFP processes utilized for more mature technologies like large-scale renewables and offshore wind have limited applicability. The Options Paper explicitly stated that a conventional RFP may not be well suited to the complex nature of nuclear support packages and to projects where allocation of project risk necessarily requires high levels of negotiation. This is because price competition with multiple variables would be challenging to implement in a traditional RFP, which allows only limited room for negotiation. In addition, in cases where the State could potentially share in a portion of cost overrun risk, a competition focused primarily on lowest bid price could create an incentive for proposals to be priced unrealistically, especially in a developing market in which cost projections are difficult to verify. Non-price evaluation criteria may mitigate, but would not eliminate, this concern, which could result in meaningful public risk if a support package is advanced.

The Options Paper also highlighted that the small number of individual projects, their large scale, and their long development timelines all contribute to the need to avoid situations where projects would either need additional injections above RFP bid price levels or would need to be abandoned with significant loss of time and sunk cost. Under a traditional RFP process, if awarded projects require support above their bid levels or are abandoned after significant time and cost have been incurred, the impacts could be particularly consequential for New York's energy system and climate goals. Staff further notes that the nuclear sector is characterized by a relatively small number of qualified providers, which limits the pool of potential reputable competitors in an open RFP.

At the same time, the tools of competition are an essential strategy for achieving the necessary levels of cost-effectiveness and project performance. To balance this need with the inherent complexities of developing a nuclear facility, a competitive open-book negotiation process is likely more appropriate for the financial commitment components of any State support package, particularly State equity participation and cost overrun terms, where the State is acting not just as a regulator but as a project partner. This negotiation approach aims to maintain competitive dynamics by negotiating with multiple parties in parallel, thereby facilitating both price discovery and robust provisions on risk sharing to avoid cost increases from cost overruns.

Given that the nuclear sector is characterized by a more limited number of potential competitors and thus an inherently small pool of potential proposers, there is a benefit to engaging as many as possible. However, the State should only engage with qualified proposers. The Options Paper recommended that a pre-qualification process may be helpful to screen developers, technologies, and project proposals as a prerequisite to entering the process for negotiating and awarding State support. This preliminary assessment process should involve screening technology providers and development companies before individual project proposals would have been developed and conducting in-depth assessments of project proposals as a precursor to procurement of projects into the types of government support initiatives. NYPA has already begun this process by issuing a Request for Qualifications aimed at identifying developers qualified to deliver its advanced nuclear generation project.

Commenters who addressed the question of procurement process largely agreed that a competitive open-book negotiation process would be appropriate given the complexity of advanced nuclear development and the unique financing arrangements it entails. Some commenters also expressly voiced concern that a lowest-price solicitation paired with State cost overrun support could invite unrealistically low bids and exposure. Commenters also supported flexibility in approach depending on market conditions and systems need and noted that transparent pre-qualification is needed to allow for sufficient oversight.

Based on all these considerations, Staff recommends that the Nuclear Backbone Procurement process be developed on the basis of competitive open-book negotiation with further specifics to be determined including taking into account developments under the CES Procurement Review proceeding. As noted in the Options Paper, open-book assessment can be employed as a complementary mechanic to ensure transparent and competitive pricing. Under

such a competitive open-book negotiation process, the State would pursue a multi-stage process where pre-qualification criteria would be used to screen potential technologies, sites, and proposers so as to select the most qualified projects for eventual competitive open-book negotiations. Key design components such as standard terms and/or guardrails constraining determinations of cost, risk, and ratepayer exposure will also need to be addressed in the formulation of a competitive open-book negotiation process. For example, evaluating project proposals on a fair and consistent basis will likely require a common financial model, benefit cost analysis, and ratepayer analysis framework to enable comparability among potentially differing proposal structures and terms and conditions. Furthermore, such a model would need to account for differences in technology type and other factors unique to the current advanced nuclear market.

Staff further recommends that the Procurement Framework should be developed with two key considerations to inform the development of the Procurement Framework: cost control and risk allocation. In a standard RFP process, cost competition is the primary mechanic for driving cost effectiveness in project proposals and ensuring the greatest value at the lowest cost for ratepayers. In a competitive open-book negotiation environment, this dynamic can still be pursued to the greatest extent possible through negotiations with multiple candidate projects, and the pre-qualification process discussed above should enable this. However, given the nature of nuclear projects as large infrastructure projects, the number of viable project proposals available for simultaneous consideration can be expected to be relatively small. Regarding costs, New York can also draw on its experience through the ZEC program, where open-book assessment can be employed as an alternative or complementary mechanism for ensuring transparent and competitive pricing.

Staff proposes that the Procurement Framework address the issues of risk management and allocation, including examining proposed risk sharing approaches. The Procurement Framework should enable the effective consideration of both how risk is managed by the proposer (and in cases where the proposer is a consortium, whether risk is allocated among consortium members in a manner most likely to contribute to project success), and how risk is allocated and managed between the proposer and the State, including the potential costs and benefits of third-party insurance.

Low initial cost estimates will need to be weighed against risk exposure especially on dimensions of cost and timeline. The implementation process will need to develop more specific guidance on this balance. Standard terms or benchmarks developed from the experience of the NYPA project, for instance on the distribution of risk among project parties, could help address this issue. Benchmarks could also help reduce the number of open variables in subsequent negotiations and offer a reference point against which a future proposed package may be assessed.

In developing the Procurement Framework, alongside the necessary screening and evaluation criteria, and supporting analyses and tools, DPS Staff and NYSERDA must also consider key support elements that will need to be developed outside of Commission proceedings (potentially including cost overrun guarantee and State equity models). Implementing these components will span several State decision-makers as intervention options funded by other sources may involve legislative or executive action through the State budget process or other relevant authorities/agencies. While this White Paper does not examine each of these funding sources in detail, a comprehensive support framework will be needed to inform the Commission and for the Commission to take a view on its interaction with these broader dynamics. Therefore, this White Paper recommends that the Commission direct DPS staff, in consultation with NYSERDA, to pursue these components through a whole-of-government approach to produce a Procurement Framework that provides the necessary support across all components of a package.

12. Implementation Plan

Staff proposes to develop, in consultation with NYSERDA, an Implementation Plan based on the key implementation issues discussed above. Given the complexity of the matters raised here, Staff recommends that the completed Implementation Plan be submitted for further Commission approval, with the pre-qualification process, if approved, to be opened following the Commission's action thereon. As noted throughout this White Paper, not every aspect of implementation would be subject to Commission determination, and other State decision making as needed should proceed in parallel.

As proposed in Section 10, Staff recommends that any projects materializing from competitive open-book negotiations would also be brought back to the Commission for review

and approval. Additional matters may arise between these decision points, and DPS Staff and NYSERDA would bring them to the Commission as needed.

Nuclear Pipeline and Sequencing

The Initiating Order directed Staff to explore the approaches that New York should pursue in terms of designing, sequencing, and technology choice to deploy a Nuclear Reliability Backbone. The Options Paper outlined four approaches to achieving five GW, including committing to a single technology, pursuing multiple different technologies in parallel, pursuing multiple technologies sequentially, or a procuring on a "project-by-project" basis. This assessment recognized the potential for the deployment of multiple units of the same technology to achieve cost reductions and provide certainty for workforce and supply chain development. Additionally, the Options Paper found that New York should maintain flexibility in technology selection, and that the cost reductions achieved through learning over time outweigh the benefit of greater access to federal tax credits through faster deployment. It also found that, for initial deployment, a more mature technology offered greater alignment with the State's objectives. Staff acknowledges that these principles identified in the sequencing options should be integrated into the pre-qualification process and Procurement Framework in a way that seeks to minimize costs and maximize benefits to all ratepayers. However, for purposes of this White Paper, Staff submits that it is too early to decide on a specific pipeline and sequencing approach as the state of technology and nuclear development in New York evolves.

Regarding the current state of technology, the Options Paper highlighted that LLWRs are well-established and have significant advantages. Specifically, LLWRs have the advantage of previous deployment experience in the United States and therefore lower cost and cost uncertainty and lower operational risk. The Westinghouse AP1000 design is noted for its unique position in the United States as the only design with a fully completed project, namely the Vogtle project in Georgia. The existence of such a real-world track record offers an argument in favor of choosing this design, since Westinghouse has benefited from lessons learned from the Vogtle plant, lowering the risk of cost overruns relative to even the more mature small modular reactor (SMR) options. At the same time, and as noted earlier in this White Paper, many commenters, including NYC, Georgians for Affordable Energy, Multiple Intervenors, National Grid, NYECC, and AGREE, emphasized the need for New York to closely examine the Vogtle

project and its well-documented project development issues, including significant delays and cost overruns. Additionally, commenters such as Constellation and MfN/NNY/NYECA underscored the criticality for New York State to learn from Vogtle's challenges and successes. The Options Paper noted that such performance risk is less of an issue for nuclear reactor designs such as the AP1000 that have built up considerable real world operational experience. Consequently, for these technologies, the cost analysis indicates that both the cost per unit of energy and the level of uncertainty of the cost projection is lower.[33] Commenters such as CATF and NYCP recommend the LLWR technology, while other commenters, like Constellation, reinforce the benefits of using proven mature technology such as the LLWR.

For newer technologies, the Options Paper defined "advanced nuclear" as encompassing a range of newer designs that improve on conventional reactors through features such as passive or inherent safety systems, modular construction, alternative coolants, and operational versatility. This includes both designs that are typically categorized as Generation III+ and Generation IV. This category includes SMRs and micro modular reactors. These newer technologies promise both the potential of ultimately lower operating costs and of more rapid cost declines. While SMRs are likely to have a higher initial cost per kW, they are also expected to have a lower cost per project, resulting in a smaller amount of upfront capital at risk for the first (and likely riskiest) reactor of the pipeline. The Options Paper suggested that repetitive construction activity may enable them to achieve cost reduction faster than LLWRs, though this has not yet been demonstrated. The Options Paper also acknowledged that maintaining optionality to switch technologies mid-pipeline is critical so the State can leverage future SMR cost breakthroughs if they do happen.

To maximize economic benefits for both established LLWRs and newer technologies, the Options Paper advocated for a strategically selected portfolio that consists of a small number of selected technologies. A core concept is that cost reductions occur primarily through the learning effects associated with deploying at scale. Critically, in the nuclear sector, such learning has been observed to occur primarily for each nuclear technology design on its own as opposed to across the entire sector. Therefore, pipeline deployment of multiple units of the same technology is important to access cost-reducing learning benefits as such an approach is expected to result in lower costs than procurement of many single-installation projects of different technologies. A pipeline commitment provides the greatest level of clarity and

certainty, helping for instance with workforce development. The Options Paper stated that building a sustained pipeline of reactors across New York State, regardless of technology, would unlock powerful learning-by-doing benefits. Delivering projects in sequence would drive efficiencies, strengthen execution, and cultivate a highly skilled, in-State nuclear construction workforce. This strategy offers several additional workforce benefits, such as reducing workforce attrition between projects and allowing training and certification investments to be deployed more effectively, supported by earlier and more accurate visibility into job volumes and construction timelines.

In terms of supply chain and procurement, the Options Paper found that greater certainty around a long-term project pipeline and a technology commitment helps to maximize opportunities and economic benefits. A firm commitment sends a clear signal to the technology provider to ramp up their production volume to meet New York's and other states' needs, which could result in cost savings from economies of scale relative to a more flexible approach. In contrast, a project-by-project approach would entail more complexity and faces higher cost risk relative to the other options due to less transferable learning, increased workforce training needs for diverse technologies, and reduced opportunities for co-siting.

In summary, the Options Paper identified that committing to a single technology type offers best economies of scale and learning, while preserving the optionality of "waiting and seeing" how newer technologies develop. This pathway offers the best opportunity to benefit from improved and more economic technologies.

Recognizing these offsetting potential benefits, the Options Paper modeled one strategy of proceeding initially with a single technology (working to capture the resulting benefits of scale and learning), while simultaneously evaluating newer technologies for their development progress with the aim of having a well-understood and feasible set of technologies for a later selection. The modeling found that such a sequential approach to selecting technology offered strong cost and learning benefits.

These insights emphasize the necessity of integrating pipeline considerations into subsequent prequalification and procurement frameworks, such that the State can optimize economic benefits for both proven LLWRs and novel technologies by advocating for a carefully selected portfolio of technologies. Given the complex and uncertain nature of the future feasibility of capturing these strategic benefits, and noting the strong estimated benefits of a

sequential approach, Staff believes that it is premature to finalize a specific pipeline and sequencing strategy at this time, and therefore proposes instead to preserve optionality , given the dynamic nature of nuclear development.

CONCLUSION

DPS Staff has prepared this White Paper in accordance with the Commission's directives in the Initiating Order. As noted throughout the discussion of this White Paper, Staff proposes several recommendations for Commission consideration, as reiterated below:

1. Staff recommends that the Commission adopt the Nuclear Reliability Backbone of 8.4 GW of statewide nuclear energy, with a target of five GW of new advanced nuclear generation that is integrated into the grid safely, timely, and cost-effectively.
2. Staff recommends that the Commission direct DPS and NYSERDA to develop and establish a revenue support mechanism for new advanced nuclear generation.
3. Staff recommends that the Commission direct DPS and NYSERDA to develop an eligibility and pre-qualification process that can offer the opportunity for initial screening of developers, sites, project proposals, and technology readiness.
4. Staff recommends that the Commission direct DPS and NYSERDA to establish a competitive open-book negotiation process with the cost control and risk allocation principles as described herein.
5. Staff recommends that the Commission direct DPS and NYSERDA to develop a new advanced nuclear Procurement Framework, and file an Implementation Plan for Commission consideration.

DPS Staff appreciates the stakeholder input provided to date and welcomes additional feedback on the recommendations herein related to the adoption of the Backbone and the proposed revenue support mechanism, pre-qualification program, competitive open-book negotiation process, and the advanced nuclear Procurement Framework.