Comments of New Yorkers for Clean Power on the Draft Blueprint for Consideration of Advanced Nuclear Technologies

November 8, 2024

---

1. About New Yorkers for Clean Power

New Yorkers for Clean Power (NYCP) is a statewide collaborative campaign to rapidly shift to a clean energy economy. Through research, education, advocacy, and organizing, the campaign seeks to advance a range of clean energy, building decarbonization, and clean transportation solutions as well as creating jobs in these industries for all communities in New York State (NYS). NYCP is a project of Catskill Mountainkeeper, Inc.

NYCP submits the following comments in response to the request for feedback on NYSERDA's Draft Blueprint for Consideration of Advanced Nuclear Technologies (Draft Blueprint).

2. Introduction

The Climate Leadership and Community Protection Act of 2019 (CLCPA) directs the NYS Public Service Commission (PSC) to establish programs to meet 70% of the state's electricity demand with renewable generation by 2030 and to meet the entire demand with zero-emission sources by 2040. The CLCPA leaves it to the PSC to define the term "zero-emission."

The combination of New York's weather profile's impact on its electricity demand patterns and the nature and the extent of the available renewable energy resources leads to a critical need for Dispatchable Emissions Free Resource (DEFRs) for cost-effectively and reliably meeting the state's electricity demand in manner that is consistent with the CLCPA's targets for 2040 and beyond.[1,2,3] Similar studies in other states considering decarbonization of their electricity systems

---

[1] Initial Report on the New York Power Grid Study (pp. 10, 102); https://www.ourenergypolicy.org/resources/initial-report-on-the-new-york-power-grid-study/
[2] Climate Change Impact Phase II; https://www.nyiso.com/documents/20142/10773574/NYISO-Climate-Impact-Study-Phase-2-Report.pdf
[3] 2022 Reliability Needs Assessment (RNA); https://www.nyiso.com/documents/20142/2248793/2022-RNA-Report.pdf

have arrived at the same conclusion.[4,5] The reason is that near exclusive reliance on intermittent sources requires overbuilding these sources. The degree of the required overbuilding increases superlinearly with the degree of reliance on intermittent sources, and will reach levels that would be impractical from cost, siting, land use, and transmission perspectives. For example, the California Public Utilities Commission determined that without DEFRs, the CAISO system would need a renewables build-out equivalent to half the existing generation capacity of the entire United States.[6] Long duration energy storage (LDES) can mitigate the grid reliability impact of low- and medium-frequency intermittency in the generation patterns of conventional renewable energy resources, but LDES cannot cost-effectively eliminate the need for DEFRs entirely.[7]

Conventional DEFRs, such as hydropower, geothermal energy, and New York's existing fleet of light-water nuclear reactors are unlikely to meet the state's projected DEFR needs in 2040 and beyond. New DEFR technologies that are truly free of greenhouse gas (GHG) and co-pollutant emissions are currently in their infancy and would require long lead times for deployment at a meaningful scale. Furthermore, in the absence of real-world experience with new DEFR technologies, there is a critical need for honest and transparent assessment and communication of the necessity, cost, safety, risks, and lifecycle environmental impacts of such technologies for these to gain sufficient public acceptance.

Additionally, in the aftermath of the 2024 elections, the federal government policy is expected to be extremely hostile towards renewable energy. Off-shore wind is likely to face permitting challenges, and solar and many other clean energy technologies face the threat of tariffs and withdrawal of incentives. Alternative energy sources likely to see any degree of federal support include nuclear energy, hydrogen, and fossil-fuel combustion with carbon capture. Of these, nuclear energy is clearly the one with the least environmental harm and is the only one with the potential to meaningfully reduce fossil fuel use.

It is therefore imperative that the state starts exploring DEFR technologies in earnest now for it to have a shot at meeting the CLCPA's 2040 targets for the electricity system emissions. In that regard, NYCP welcomes the release of the Draft Blueprint and the solicitation of feedback on it.

3. Issues for Consideration

The two biggest obstacles to the revival of nuclear energy in the United States are cost and a negative public perception, with high cost contributing significantly to public perception. Therefore, any consideration for the potential deployment of nuclear power generation must maintain a sharp focus on costs. The comments and suggestions below reflect this focus.

---

[4] The Role of Firm Low-Carbon Electricity Resources in Deep Decarbonization of Power Generation; https://www.sciencedirect.com/science/article/pii/S2542435118303866
[5] Clean Firm Power is the Key to California's Carbon-Free Energy Future; https://issues.org/california-decarbonizing-power-wind-solar-nuclear-gas/
[6] CPUC Perspectives on Electric Sector Decarbonization; https://ww2.arb.ca.gov/sites/default/files/2021-11/CPUC-sp22-electricity-ws-11-02-21.pdf
[7] The Design Space for Long-Duration Energy Storage in Decarbonized Power Systems; https://www.nature.com/articles/s41560-021-00796-8

Technological Readiness: There are considerable technological, cost, workforce, and supply chain risks associated with first-of-a-kink (FOAK) projects. Unless New York secures substantial financial assistance and cost guarantees from the federal government, in its initial considerations, the state should focus on Nth-of-a-kind (NOAK) or between-of-a-kind (BOAK) plants.

Given that Georgia Power recently added two Westinghouse AP1000 reactors to its fleet of nuclear power plants, special consideration must be given to the AP300 SMR[8] while also evaluating AP1000 itself as an eventual replacement for some of the state's aging reactors. The shared technology, components, deployment experience, and fuel supply chain between AP1000 and AP300 have the potential for significant cost savings. The cost-reduction potential of the learning curve was apparent in the Vogtle project, where the cost of Unit 4 was about 30% lower than that of Unit 3. It's not surprising that North Carolina Utilities Commission recently directed[9] Duke Energy to consider AP1000 in its next IRP in 2025 for making progress towards the state's clean energy standard.

Lack of standardization is one of the biggest drivers of the cost of nuclear energy. For New York to successfully deploy it, coalescing around a specific technology, especially one that gains ground in other states, should be a more important consideration than the technological features of various reactor designs.

Siting and Supplemental Applications: The draft blueprint appropriately suggests siting future nuclear plants at the locations of retiring power plants running on fossil-fuels. This would not only reduce land acquisition and transmission costs, but is also consistent with the state's just transition goals. Such siting would avoid the loss of jobs, economic activity, and tax revenues associated with the closure of the polluting power plant. The host community would maintain its financial and jobs security, while breathing cleaner air.

The draft blueprint also appropriately suggests exploring supplemental applications of the free waste heat available as a byproduct of power generation. In addition to providing emission and pollution free energy for these applications, this has the potential to create supplemental revenue streams for the power plants, thereby lowering their overall operational expenses. While some advanced nuclear reactor designs enable them to supply high-temperature heat, even the current Light Water Reactor (LWR) technology is capable of supplying heat for district heating[10] and certain industrial processes[11] such as pulp and paper production[12] and low-temperature solid sorbent direct air capture (DAC)[13] of carbon dioxide.

---

[8] Westinghouse Unveils Game-Changing AP300™ Small Modular Reactor for Mid-Sized Nuclear Technology; https://info.westinghousenuclear.com/news/westinghouse-launches-ap300-smr

[9] State of North Carolina Utilities Commission Docket E-100 Sub 190; https://t.co/SdTW98QifS

[10] District Heating Supply from Nuclear Power Plants; https://www.powermag.com/district-heating-supply-from-nuclear-power-plants/

[11] Nuclear Process Heat for Industry; https://world-nuclear.org/information-library/non-power-nuclear-applications/industry/nuclear-process-heat-for-industry

[12] Pulp Mills, Pulp & Paper Mills, Paper Mills in NY; http://www.paperstudies.org/millsonline/newyork.php

[13] Assessment of Nuclear Energy to Support Negative Emission Technologies; https://fuelcycleoptions.inl.gov/SiteAssets/SitePages/Home/Nuclear_to_support_NET_final.pdf

Therefore, colocation with a potential subscriber for thermal energy should be a siting consideration.

Research and Development Funding: The limited funds in the Climate Investment Account (CIA) from New York Cap-and-Invest (NYCI) revenues should not be used for research, development, or demonstration projects related to advanced nuclear technologies. NYCI funds collected directly or indirectly from New York's energy users must be employed for immediate greenhouse gas (GHG) and co-pollutant reduction measures; nuclear research & developments is not an appropriate use of these funds. Achieving maximal emissions reductions from the CIA funds would not only help with the achievement of our GHG reduction targets, but will also help lower NYCI allowance prices.

Any use of CIA funds for advancing nuclear technology will also be viewed as a competition for resources between nuclear energy and renewable energy or other decarbonization technologies. This has the potential to further sour the public opinion on nuclear energy and would be detrimental to the advancement of nuclear technology in the long run. Any real or perceived competition for resources between nuclear and renewable energy must be avoided.

The state must tap into other funding sources, including assistance from the US Department of Energy's Loan Program Office for speculative and long-term investments such as those in advanced nuclear technologies.

NYCP appreciates the opportunity to submit these comments. Please do not hesitate to contact us with any questions or for more information on any of the topics covered in this document.

Sincerely,

Anshul Gupta
Policy & Research Director, New Yorkers for Clean Power
anshul@nyforcleanpower.org