Caiazza Comments on Draft 2025 NYPA Renewables Strategic Plan

The 2023-24 enacted State Budget authorized and directed the Power Authority of the State of New York (NYPA) to engage in the largest expansion of the Authority's responsibilities in decades to advance renewable energy and support other state priorities. The 2025 Draft NYPA Renewables Strategic Plan (Draft Plan) is the second edition of an outline approach for developing new renewable energy generation projects to supply New Yorkers with "affordable, reliable, emission-free electricity".

The primary driver for Climate Leadership & Community Protection Act (Climate Act) implementation and the NYPA Draft Plan for renewable development is Public Service Law (PSL) Section 66-P, Establishment of a renewable energy program. It requires the Public Service Commission (PSC) to establish a program that meets the 2030 Climate Act mandates that a minimum of 70% of the statewide electric generation in 2030 is generated by renewable energy systems and the 2040 requirement that the statewide electrical demand system will be zero emissions. PSL 66-P also includes often overlooked boundary condition provisions. The PSC is empowered by this statute to temporarily suspend or modify these obligations if, after conducting an appropriate hearing, it finds that the PSL 66-P impedes the provision of safe and adequate electric service.

My comments argue that the NYPA Draft Plan must develop its own affordability and reliability boundary conditions to ensure that its plans maintain adequate and reliable electric supply. The Draft Plan guides NYPA's mandate to "plan, design, develop, finance, construct, own, operate, maintain and improve renewable energy generation projects to maintain an adequate and reliable supply of electric power and energy and support New York State's renewable energy goals established in the Climate Act". Technical staff at NYPA understand the impacts of renewable energy on the electric system whereas the legislators that promulgated the law requiring NYPA to advance renewable energy did not. Establishing constraints based on a comprehensive understanding of the electric system is a commonsense safeguard.

If there are no constraints, then it is very likely that there will be unacceptable consequences. Moreover, two things have changed since NY politicians expanded NYPA's renewable energy responsibilities that should be reflected in the 2025 Draft Plan. It has become clear that the costs to implement the Climate Act are significantly more than expected. There was a blackout on the Iberian Peninsula that was associated with solar generation. The Draft Plan should address both.

I submitted comments on last year's NYPA Renewables Strategic Plan that argued that the Draft Plan should be paused until completion of a comprehensive feasibility analysis. These comments suggest that if the boundary condition criteria are exceeded that implementation should be paused, and a feasibility analysis completed before proceeding.

Affordability

My overarching concern with Climate Act implementation is affordability. Since the last update to the NYPA strategic renewable energy plan Governor Hochul has acknowledged this problem, As part of local re-election outreach this summer Governor Hochul turned up at a western New York restaurant to discuss affordability issues. Buffalo TV Station WRGZ 2 On You Side asked (video) about the effect of the Climate Act on consumer bills. She suggested that a "slow down" on the Climate Act was needed and costs are an issue:

> We asked: "On affordability, you mentioned utility bills. Heard you say it, governor. Isn't it true that ratepayers are paying for that because of the climate change law. We do know the the Public Service Commission (in February 2023) actually allowed for increased rates to be able to pay for some of that, connecting various ..."
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> The Governor responded, "This law goes back a number of years."
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> At the end of her long response on utility rates and energy strategy, there was this summation from Hochul: "You're absolutely right. Utility costs are a huge burden of families, and I'll do whatever I can to alleviate that."

This is relevant for the Draft Plan because the Governor recognizes the goal of "affordable, reliable, emission-free electricity". The affordable and reliable electricity goals are meaningless unless those terms are defined. The Draft Plan must acknowledge the PSL 66-P boundary conditions and recognize that the definitions are imprecise and need to be to be refined to properly protect New Yorkers. The fact that there is insufficient guidance should not mean that NYPA does not have the responsibility to address this problem. NYPA has the technical expertise to define its own criteria for affordable, reliable electricity that should be incorporated into the Draft Plan.

Reliability

On April 28, 2025, a problem at a photovoltaic plant in Spain triggered a blackout over the Iberian Peninsula. The Draft Plan must address the ramifications of this blackout.

Two recent articles at the Watt-Logic blog described the blackout that affected Spain, Portugal, and France. I include these descriptions because NYPA staff understand the problems but most New Yorkers do not. The first article looked at the physics of power grids and the general behavior of both synchronous generation (gas, hydro and nuclear) and inverter-based generation (wind, solar and batteries). Watt-Logic gives an overview explanation of the "importance of voltage control and reactive power" that were the root cause of the Spanish blackout. In short, the existing system depends upon synchronous generators that convert mechanical energy (spinning turbines) into electrical energy, producing alternating current that matches the frequency of the electric grid. These generators inherently provide important electric grid functions that are difficult to replicate with inverter-based resources like wind,

solar, and energy storage. The overarching problem is that not only do inverter-based resources not perform many of these necessary functions, but they can also de-stabilize the grid in certain, poorly understood circumstances.

The second post addressed what we know about the Iberian blackout. Watt-Logic explains that the blackout "demonstrated the importance of voltage control and reactive power, and how a weak grid, with poor controls, was brought down by a single faulty solar inverter." The basis of the blog post was a "concise but informative report produced by Red Eléctrica de España ("REE"), the Spanish Transmission System Operator ("TSO"), which is more accessible than the much longer government report (available only in Spanish – rough English translation here)."

Watt-Logic lists the key messages from the REE report:

- The blackout was triggered by a PV inverter–induced voltage oscillation
- Inappropriate disconnections of wind and solar generation, and widespread failure of reactive power support, escalated the disturbance
- REE relied on static controls and failed to deploy dynamic response assets
- Grid code non-compliance was widespread among renewables, conventional generators, and even REE itself (via non-compliant transformers)
- The collapse exposes systemic risks in low-inertia grids with high levels of inverter-based resources ("IBRs") and inadequate voltage control
- It is notable that, despite confident denials from some renewables advocates in the immediate aftermath, it was in fact a malfunctioning solar installation that triggered the voltage oscillation initiating the collapse. Wind and solar generators failed to meet fault ride-through obligations, and both inverter-based and conventional generators failed to provide the required reactive power support. Crucially, conventional generators did not trip prematurely – they remained online until system conditions breached their design tolerances.

The second reason that the Spanish blackout should be considered in the Draft Plan is because of the cost implications of providing ancillary services necessary for reliability. Many still believe the claim that solar is the cheapest form of energy. A recent Doomberg blog explains that after the blackout in Spain earlier this year "the true cost of solar can no longer be hidden from the public."

The Doomberg post describes the blackout and the attempts by Spanish authorities to deflect blame away from the possibility that the problem was due to the solar facilities. Their post goes on: "As the results of the investigation became undeniable, responsibility was pinned not on solar but on the grid operators who had failed to make the necessary investments to handle the rapid influx of green electricity." They noted that:

Last week, an expansive article in *Bloomberg Green*—confessionally titled "The Fix For Solar Blackouts Is Already Here"—captured this sentiment. It lamented that the penetration of solar and wind has outpaced the buildout of stabilization technologies such as synchronous condensers and grid-forming inverters. In other words, the renewables worked as designed, but the infrastructure to integrate them safely at such high percentages of supply lagged far behind:

> "The result is huge spending on new wind and solar capacity, but not enough on grids. The 27 members of the European Union and the UK invest on average $0.7 in grids for every dollar spent on renewables, according to BloombergNEF. Spain ranks the lowest, with only $0.3 spent for every dollar.
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> Blackouts are causing political backlashes against renewables that politicians cannot afford right now. 'Here's the problem: Investments in the right infrastructure are not keeping up,' said António Guterres, head of the United Nations, in a July speech. 'That ratio should be one to one.'"

The NYPA Draft Plan does not mention this blackout and its implications. The authors of the legislation requiring that NYPA support renewables have a very superficial knowledge of the electric system. They subscribe to the presumption in simplistic academic energy studies which guided the Climate Act that generation and load are sufficient to predict success—that if there is enough generation to equal the load, no matter the quality of the source or where it is located, the system will work. Deflecting blame, renewable proponents now say that insufficient "grid investments" caused the Iberian blackout, not renewables. However, if not for an over-dependence on intermittent inverter-based resources, the unique grid investments to support them would be unnecessary. If renewables are expanded beyond the ability of the grid to compensate for the problems they create, then blackouts are inevitable.

NYPA has the technical expertise to define criteria for reliability standards necessary to address the observed problems that lead to the Spanish blackout. Appropriate criteria must be developed and used to guide renewable energy deployment.

Other Comments

In addition to its responsibility to provide boundary conditions to ensure affordable and reliable electricity, the expert staff at NYPA need to confront the emotion-driven rhetoric of uninformed clean energy advocates when their claims do not meet technical standards necessary for policy decisions. Such comments often begin with the demand that NYPA must double its efforts and build the 15GW that New York needs "to comply with the CLCPA, lower electricity bills, create 25,000 green union jobs, and end our fossil fuel dependence."

The comments demanding that NYPA "must build 15 GW of public renewable energy by 2030" ignore reality. Numerous implementation issues have delayed deployments to the point where the Clean Energy Standard Biennial Review admits that the 70% renewable energy by 2030 target will not be achieved. There should be no expectation that NYPA can accelerate its deployment substantially for the same reasons.

The myth that wind and solar will lower electricity bills is evaporating as described in the section addressing the Spanish blackout. It is not enough to just build renewable energy. Investments in grid infrastructure cited by the head of the United Nations must be made. These include transmission, storage, dispatchable backup generation, and grid-stabilizing improvements to compensate for inverter-based technology. However, all of these add to total cost of the system.

Commenters claimed without any evidence that building 15 GW of renewables would "create 25,000 green union jobs". Too often New York's energy policies have ignored experiences in other jurisdictions that have already tried to pursue a net-zero transition. David Turver has described the cost of green energy jobs in the United Kingdom. One of the points he makes is that number of green jobs means that the energy sector is becoming less productive. Most of these jobs are utterly dependent upon subsidies which adds inefficiency. He concludes:

> We can see that each offshore wind job cost £264K in subsidy, each onshore wind job cost over £309K and solar nearly £100K. The average across all three sectors is over £192K per job.

At the current exchange rate, the average across all three sectors is over $259,000 per job. This leads to the question that the Draft Plan must address. Who is going to pay for those subsidies?

The claim that deploying more renewables will "end our fossil fuel dependence" ignores society's broader dependency on fossil fuels. Ronald Stien has made the point that "the world's 8 billion are dependent on more than 6,000 products made from the oil derivatives manufactured from crude oil". Furthermore, until dispatchable, emissions-free resources are deployed New York's electric grid has to rely on dispatchable fossil fuel generators. Deploying excess renewable energy affects the economic viability of the backup fossil fuel generators and will likely lead to subsidies to maintain that necessary support.

Conclusion

The current Climate Leadership & Community Protection Act (Climate Act) PSL 66-P implementation plan relies on wind and solar generation because the authors of Climate Act asserted that the plan would work with existing technologies and would be cost effective. However, no jurisdiction anywhere has successfully developed an electric system that relies on those resources to the extent proposed by the Climate Act. In comments submitted last year, I argued that it is premature to advance renewable energy as proposed unless and until a demonstration project has been completed that proves that the proposed wind, solar, and energy storage approach can produce affordable, reliable, emission-free electricity. Events that have occurred since then reenforce this. The Draft Plan should be paused until completion of a comprehensive feasibility analysis outlining how issues raised in these comments and elsewhere can be addressed without affecting the mandate for reliable and affordable electricity. As an alternative, the Draft Plan must define safety valve criteria for affordability and reliability metrics. If the safety valve criteria are exceeded then implementation should be paused until alternatives that will not adversely affect affordability and reliability are identified and proven in a demonstration project. This approach is the only way to ensure that actions in the Draft Plan do not cause unaffordable and unreliable energy.

I submitted this comment because I believe that the unresolved issues associated with inverter-based resource deployment pose significant risks to reliability and affordability. For too long the electric energy system experts in New York have danced around the consequences of the flawed analyses that form the basis of the Climate Act mandates and schedule. The enabling legislation that directs NYPA to double down on wind and solar development without addressing the unresolved issues continues that ill-fated approach. Safety valve conditions that trigger feasibility analyses if exceeded are necessary before proceeding. The opinions expressed in this document do not reflect the position of any of my previous employers or any other company I have been associated with, these comments are mine alone.

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