NEW YORK STATE
PUBLIC SERVICE COMMISSION

Case 15-E-0302 – Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and Clean Energy Standard

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COMMENTS BY RICHARD ELLENBOGEN AND ROGER CAIAZZA REGARDING DEPARTMENT OF PUBLIC SERVICE STAFF PROPOSED DEFINITIONS OF KEY TERMS IN PSL § 66-P

February 3, 2025

The comments that follow are submitted by Richard Ellenbogen and Roger Caiazza in response to the Department of Public Service Staff ("DPS") suggested interpretations of key terms in the provisions of the Climate Leadership and Community Protection Act ("Climate Act"). We commend the DPS initiative to clarify and provide guidance around the terms "statewide electrical demand system" and "zero emissions" ("DPS Proposal") but our primary concern is that there is no plan for the development of incremental renewables, the retirement of non-compliant resources, and methodologies to address gaps between existing resources and the reliability needs of the system. The need for a plan is more pressing now since the recent Battery Energy Storage System (BESS) fire in California.

Richard Ellenbogen has been speaking to NY State policy makers and regulators since 2019 regarding the deficiencies inherent in NY State Energy policy. The issues that he advised them of six years ago have now become newspaper headlines and these issues will proceed to get worse. He has a Bachelor's Degree and a Master Degree in Electrical Engineering from Cornell and was a lead Engineer in the Power Systems Lab at Bell Laboratories. For the past 45 years he has run his own manufacturing business in Westchester County and has reduced its electric utility load by 80% while reducing its carbon footprint by 30% - 40% below that of the downstate system.

Roger Caiazza has been following the Climate Leadership & Community Protection Act (Climate Act) since it was first proposed, submitted comments on the Climate Act implementation plan, and has written over 500 articles about New York's net-zero transition. He is a meteorologist with over 40 years' experience in the electric generating sector.

The opinions expressed in this comment do not reflect the position of any of our previous employers or any other company we have been associated with, these comments are ours alone.

DPS Proposal

We endorse the filings made by the New York Independent System Operator and the Joint Utilities in response to the proposed definitions of "statewide electrical demand system" and "zero emissions". It is necessary to draft implementing regulations that rely on consistent and

clear definitions to satisfy the zero emissions by the 2040 standard and to maintain electric system reliability. It is also essential that imported energy is treated consistently and transparently. However, to maintain system reliability in a zero emissions electric system that meets the aspirational Climate Act schedule new technologies and expanded existing technologies must be deployed on an unprecedented scale.

We concur with this Joint Utility statement:

> The Joint Utilities recommend that the Commission direct Staff to develop a clear roadmap that addresses future system needs, potential gaps in supply and demand and clear methodologies to characterize those gaps, clean energy technology readiness, sufficient access to generation to the extent gaps are identified, and resource attributes necessary for the reliable operation of New York's electric system amid ongoing growth in intermittent renewable supply and electric demand.

We also endorse the Joint Utility recommendation that:

> Given the potential for New York's clean energy resources to fall short of demand, or suffer from delayed entry for various reasons, and the challenges associated with the commercial availability and maturity of new energy technologies, the Commission should require Staff to develop a plan for the development of incremental renewables, the retirement of non-compliant resources, and methodologies to address gaps between existing resources and the reliability needs of the system, while also ensuring that reliability and resource adequacy do not suffer. Staff should also consider the development status and lead time of new and existing technologies from research and development to their commercial deployment. It is imperative to address these issues, set expectations and identify needs for the journey towards the 2040 zero emissions target.

Time to Pause the Process

The remainder of our comments describe reasons why it is appropriate to pause the process.

The overarching reason to pause the process is that the safety valve provisions for affordability and reliability that are directly related to the zero emissions resource in New York Public Service

Law § 66-p (4). "Establishment of a renewable energy program" are not defined. Section 66-p (4) states: "The commission may temporarily suspend or modify the obligations under such program provided that the commission, after conducting a hearing as provided in section twenty of this chapter, makes a finding that the program impedes the provision of safe and adequate electric service; the program is likely to impair existing obligations and agreements; and/or that there is a significant increase in arrears or service disconnections that the commission determines is related to the program".

The implementation process should be paused for anything beyond Behind the Meter (BTM) generation sources and load reductions until criteria are defined and a tracking process established for "safe and adequate electric service" and "significant increase in arrears or service disconnections". This is necessary so that there is a clearly defined standard for the zero-emission resources considered. The Joint Utilities recommendations for a clear roadmap and a "plan for the development of incremental renewables, the retirement of non-compliant resources, and methodologies to address gaps between existing resources and the reliability needs of the system" are valid reasons by themselves to pause the process. While they are important, the methodologies to address the need for dispatchable emissions-free resources (DEFR) is an even more fundamental reason for a pause.

Responsible New York agencies all agree that new DEFR technologies are needed to make a solar and wind-reliant electric energy system work reliably. No one knows what those technologies are. We believe the only likely viable DEFR backup technology is nuclear generation because it is the only candidate resource that is technologically ready, can be expanded as needed, and does not suffer from limitations of the Second Law of Thermodynamics.

This situation is a fundamental reason why a pause is necessary. If the only viable DEFR solution is nuclear, then the wind, solar, and energy storage approach cannot be implemented without nuclear power. Using nuclear solely as a backup is inappropriate because it works best as a baseload resource. Developing baseload nuclear eliminates the need for a huge DEFR

backup resource and massive buildout of wind turbines and solar panels sprawling over the state's lands and water.

NYSERDA and DPS have a five-year plan presumably to determine what technology should be used going forward. It is obviously prudent to pause renewable development until some DEFR technology is proven feasible. The choice and even the viability of any DEFR technology will affect the entire design of the future electric structure necessary to meet the Climate Act net-zero energy system.

Lithium Ion Storage Safety Concerns

A recent incident raises an important safety issue that is another reason to pause implementation.

The Integration Analysis Mitigation Scenario 2 projection for battery storage is 1,500 MW in 2025, 3,000 MW in 2030, 8,292 MW in 2035, and 15,388 MW in 2040. The Clean Energy Group prepared a report and facilitated a webinar entitled "Replacing NYC's Peaker Plants with Clean Alternatives: Progress, Barriers, and Pathways Forward" on February 6, 2024, that discussed battery storage. Victor Davila, Community Organizer, THE POINT CDC included a slide in his presentation that demanded that battery storage replace peaking power plants. The Peak Coalition has also recommended that battery storage replace peaking power plants. They have endorsed the Rise Light & Power Renewable Ravenswood initiative that proposes to transition Ravenswood Generating Station into a clean energy hub. The plan involves the replacement of Ravenwood's remaining peaking capacity with "a mix of offshore wind, upstate renewables, district heating, and large-scale battery storage".

However, there are substantive safety concerns. These systems must overcome space constraint issues and are not proven technology. When a leading expert on batteries says: "Everybody has to be educated how to use these batteries safely", we think the best course of action is to follow his advice. It is not appropriate to make the residents of the disadvantaged communities near a BESS become unwilling lab rats to test whether a technology that can generate toxic gases, cause fires, and create explosions is appropriate in an urban setting.

It is appropriate to consider what would happen if there was a fire at Ravenswood. The Vistra Moss Landing Energy Storage Facility is the largest lithium battery energy storage system in the world, located in Moss Landing, California. It has a total capacity of 750 MW and 3,000 MWh, providing critical support to California's electricity grid. On January 16, 2025 a fire was reported at the facility shortly after 3 PM. Mercury News reported that:

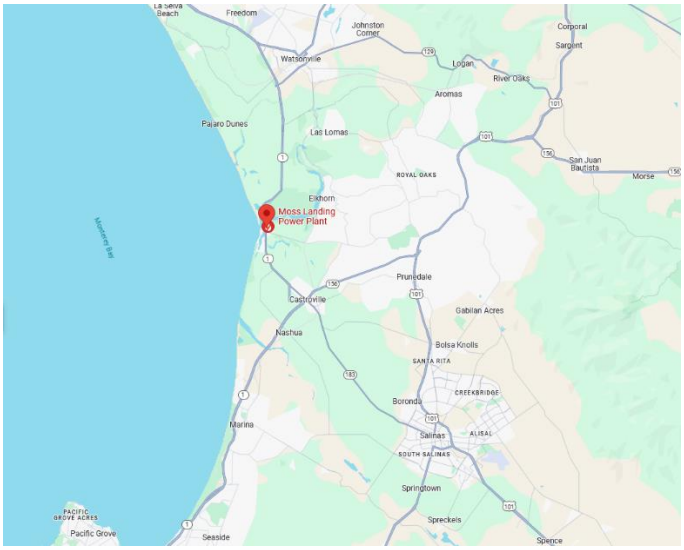
> Fire Chief Joel Mendoza of the North County Fire Protection said at a Friday morning press conference said the fire had died down significantly by 8:30 a.m., down from its peak about 12 hours earlier. The evacuations remained in place at 11 a.m. for about 1,200 residents

New York City Battery Storage Fire Impacts

The Moss Landing Battery Plant fire was burning at a temperature of between 2500 - 5000 degrees Fahrenheit. According to reports, the fire engulfed 75% of the 300 MW, 1200 MWh facility. Even though those batteries were housed in an older building, to understand the size of the fire we can assume a 4 MW battery fits in a package the size of a 40-foot sea container. There were about 56 sea container sized units on fire. The first responders could not get close enough to the fire to fight it because a lot of the water sprayed on it would likely turn to steam before it hit the batteries. Lithium battery fires turn water that does come into contact with them into hydrogen and oxygen. Explosive fuel, an oxidizer, and heat sources aren't a great combination. At $400 per Kilowatt-hour, that is $360 million in damage for the 225 Megawatts, 900 MWh that were burning, not counting cleanup costs. There are claims that the newer batteries are safer than those at Moss Landing, however they still contain Lithium which will burn at the high temperatures and fires are unpredictable.

Please explain to anyone how the technology can qualify as zero emission. That fire emitted many years worth of any potential carbon savings. Not to mention that any water sprayed on it would carry heavy metals and other toxins into the ground or into Monterey Bay. In addition to the ridiculous cost of the storage and the short lifespan, this has been one of our arguments against these facilities for years.

This fire has further dire implications for use in New York City. At Moss Landing, there were 7676 acres under evacuation with only 1214 people living there. At 640 acres per square mile, that is 12 square miles. As the plant is next to the ocean, if it were landbound, the evacuation area would be twice that or 24 square miles. It is a circle with a radius of about 2.75 miles, much of which is over the Pacific Ocean. The following figure shows the area around the plant.

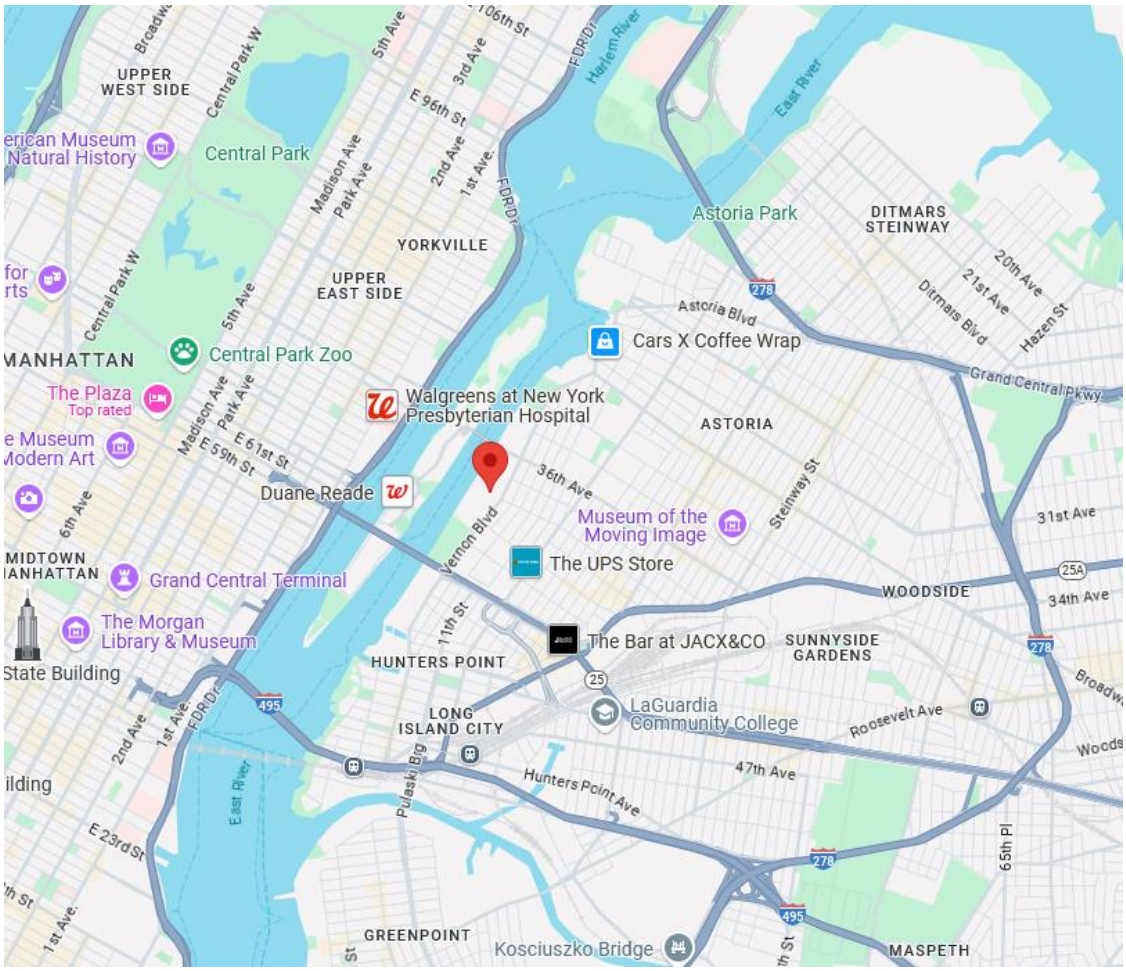


It was not the fire that caused the large evacuation area but instead the emissions and the fact that they had no way to put out the fire and eliminate the emissions. The burning batteries emit Hydrogen Fluoride gas/Hydrofluoric acid, carbon monoxide, other hydrocarbons, and 12 - 760 times the legal limit of metallic particles including Lithium, nickel, cobalt, and manganese. To understand the toxicity of Hydrogen Fluoride, see the following links.

- https://www.cdc.gov/chemical-emergencies/chemical-fact-sheets/hydrogen-fluoride.html
- https://inchem.org/documents/icsc/icsc/eics0283.htm
- https://cameochemicals.noaa.gov/chemical/5022

They are building a similar sized storage facility using the same technology at the Ravenswood Power Plant in Queens. It is not clear that anything can be done to make it any safer than the Moss Landing Plant. A similar fire there would require at least a shelter in place order and possibly an evacuation order for nearly a million people to say nothing about shutting down

highways and the East River. The Ravenswood location is the Red Stick Pin on Vernon Blvd. across the East River from Roosevelt Island shown below.



The average population density of NY City is 30,000 people per square mile. It is the most densely populated city in the United States, except that figure also includes less densely populated areas in the outer boroughs. The average population density of Manhattan is 73,000 people per square mile and a 24 Square mile evacuation zone would cover some of the most densely populated areas of Queens, Brooklyn, and Manhattan. The evacuation zone would cover most of the map shown. If the evacuation zone was even smaller than at Moss Landing, only two miles from Ravenswood extends to the West Side of Central Park due west, southwest to the Empire State building on 33rd Street and 5th Avenue, all of the East side of Manhattan above 30th Street up to 106th Street, and Queens and Brooklyn from the RFK Bridge down to

Greenpoint. That is the entire area circled by Routes 278 and 495. Those are the Brooklyn Queens Expressway and the Long Island Expressway, roads that are notorious for being parking lots on a normal day.

Roosevelt Island has 12,000 Residents and a University Complex, Cornell Tech. It is across a narrow section of the East River from Ravenswood and has four means of ingress or egress, a road that runs through the Ravenswood site that would be unusable in a Moss Landing type fire, a tram, a ferry terminal, and the subway. Each tram car can carry 125 people and make 115 trips per day, or about 14,000 people in 16 hours of daily operation. It is not suitable for a mass evacuation. The ferry terminal is just south of the road bridge on the Ravenswood side of the island, a few hundred yards from the plant, and would likely be unusable in a Moss Landing type of event. The subway station on Roosevelt Island is one of the city's deepest at 100 feet underground. With heavier than air emissions of Hydrogen Fluoride/Hydrofluoric acid from a Lithium battery fire, this station could quickly become filled with Hydrofluoric acid gas and become uninhabitable. There is no guarantee that everyone on Roosevelt Island would be able to evacuate in a timely manner, if at all.

What would happen during a battery fire mass evacuation that could also potentially impact the utility system and mass transit in a worst-case scenario, eliminating subways as a viable means of egress? Grand Central Station would also fall within a 2-mile radius evacuation zone so would Metro North trains be able to operate? Would any of the underground transit be usable if there were high emissions of Hydrofluoric acid vapor? What contamination would enter the East River during a similar fire at Ravenswood? How many people would die in an evacuation like that from heart attacks, being crushed in a crowd or run over by vehicles, and how many other types of accidents that could occur in an evacuation of that size? A 2 mile evacuation zone would also include all of the hospitals between 60th Street and 70th Street near the East River including Sloan Kettering and Weill- Cornell, and also NYU Langone Medical Center on 34th Street and the East River. How would those facilities be evacuated? How much damage would be done by the settling of heavy metal particulate in a densely populated urban area? Monterey County declared a State of Emergency a week after the fire because of concern about the residual contaminants that have settled in the surrounding area.

Beyond the evacuation issues and the safety issues, we have to ask why these facilities are even needed at this time. As Ravenswood is being redeveloped as a "Clean Energy Hub" it is not clear how much clean energy will there be to charge the batteries. The Clean Path NY Tier 4 energy contract was cancelled in November 2024, on December 20, Clean Path NY petitioned PSC seeking Priority Transmission Project designation and, on January 2, 2025, Clean Path NY asked that its Article VII (transmission siting) application be paused pending the outcome of the petition so the project designed to bring renewables to NY City from Central NY is up in the air. Furthermore, the termination of Offshore Wind by the Trump administration is another roadblock. Sufficient Offshore Wind would have been more than 10 years away even if it hadn't been terminated due to high costs, supply chain constraints and a lack of Jones Act compliant Jack ships needed for the installations. It will be years before sufficient zero-emissions energy is available for this facility.

In the meantime, the BESS facility will be storing fossil fuel-based generation with an average carbon footprint of approximately 950 pounds of CO2 per MWh as per EPA figures for the downstate NY utility system. With 15% - 20% charge-discharge losses added, that carbon footprint is increased to over 1100 pounds of CO2 per MWh for any BESS System in the downstate area. The 300 MW, 1200 MWh facility would add 180,000 pounds or 81 metric tons of additional CO2 to the city's carbon footprint every time that it was charged. How can that be considered "clean energy" or climate friendly?

In comparison, a highly polluting 60-year-old generating plant like EF Barrett could be replaced with a Combined Cycle gas plant with CO2 emissions of about 800 pounds per MWh, 30% lower than the battery facilities and it will have a lifetime five to six times longer. Combined Cycle plants have been operating safely for years and are a mainstream technology. If coupled with commercially available, recently available Chemical Looping technology, that carbon footprint could be reduced even further while also helping to mitigate Long Island's solid waste issues. The same could be done at Ravenswood. With or without the newer Chemical Looping technology, the Combined Cycle plants are a superior solution to batteries in NY State at this time.

There is another reason to pause the process. New York State and New York City ARE NOT California where renewable development is much further along. Solar arrays generate far less energy per acre in NY State and as a result, the state is many years away from needing these BESS facilities. By the time that there are sufficient renewables available in NY State to create the Duck Curve and a need to charge the batteries, any Li-ion batteries installed now will have deteriorated past their 8 – 10-year operating life. As a result, NY State ratepayers will be saddled with hundreds of millions of dollars of expenses on their utility bills that had the net effect of raising the city's and state's carbon footprint more than the peaker plants that they are designed to replace.

How is this sane energy policy or a good climate policy? Beyond Ravenswood, BESS Systems installed in the downstate region will suffer from similar issues and present other hazards. Systems installed in wooded areas risk starting wildfires similar to what was experienced in Orange County during the mini-drought this past Autumn where a first responder lost his life. In wooded areas near homes, there is a risk of creating a Los Angeles type fire situation. There were even wildfires in Northern Manhattan during that time period. What will happen to the insurance costs of homes and businesses if a BESS facility is built near them in light of recent events and all of this is being implemented for a net negative climate benefit. In NY State, the Li-ion BESS Systems have a negative upside and a highly negative downside.

A recent Article written on the Moss Landing Fire titled "Why we don't need to worry too much about the latest grid battery fire" argues that our concerns are exaggerated. However, the cavalier attitude displayed by the proponents of the battery technology is on clear display. If the utility installs a technology in a population center, there should be a high degree of confidence that the residents should have no reason to worry. The public can't be turned into a science project if there is going to be any future hope of implementing technologies that can solve the energy problems facing society. Clearly, implementation of BESS in populated areas needs to be paused until safety issues are resolved.

Conclusion

The Joint Utility statement recommends that the Commission direct Staff to develop a clear roadmap that addresses, among other things, clean energy technology readiness. This recommendation would not be necessary if there was a clear roadmap available. In the absence of such a plan the Administration's approach to meet the Climate Act targets has been to push ahead without consideration of technological ramifications. The Moss Landing BESS fire underscores the risk of such an approach. It would be inappropriate to proceed with BESS instatllations in New York City and the other densely populated regions of New York State until the full scope of safety risks are understood. Additionally, the entire process should be paused until the state has a clear understanding of what resources will actually be needed to safely implement a sound energy plan. This will prevent the squandering of resources on technologies that will not reduce GHG emissions and will help to ensure safety and economic vitality for New York State residents.