COMMENTS OF THE NEW YORK INDEPENDENT SYSTEM OPERATOR, INC. ON THE CARBON POLLUTION EMISSION GUIDELINES FOR EXISTING STATIONARY SOURCES: ELECTRIC UTILITY GENERATING UNITS

Docket ID No. EPA-HQ-OAR-2013-0602

Introduction

The New York Independent System Operator, Inc. ("NYISO") is an independent not-for-profit corporation responsible for the reliable operation of New York's nearly 11,000 miles of high-voltage transmission and the dispatch of more than 500 electric power generators. In addition, the NYISO administers bulk power markets through which an average of approximately $7.5 billion in electricity and related products are traded annually. The NYISO's mission is to serve the public interest and provide benefit to customers by maintaining and enhancing regional reliability; operating open, fair and competitive wholesale markets; planning the power system for the future; and providing factual information to policy makers, stakeholders, and investors in the power system.

On June 2, 2014, the Environmental Protection Agency ("EPA") issued the proposed *Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units*, referred to as the "Clean Power Plan."[1] The Clean Power Plan proposes to limit carbon dioxide ("CO_2") emissions from the electric power sector by establishing mandatory, state-specific emissions rate targets pursuant to Clean Air Act §111(d). These targets reflect the EPA's assumptions regarding reductions in CO_2 emissions that it believes each state can achieve through emissions reductions measures grouped into four "Building Blocks": (1) heat rate improvements at coal-fired electric utility generating units ("EGUs"); (2) redispatch of natural gas combined cycle ("NGCC") EGUs; (3) further development and use of renewable generation and preservation of "at risk" nuclear generation; and (4) annual incremental increases in demand-side energy efficiency.

As proposed, the Clean Power Plan presents potentially serious reliability implications for New York. A majority of the electric capacity within New York City is dual-fuel oil/gas steam-fired EGUs. These units are critically important, both due to their location within the transmission constrained New York City area and because they possess dual fuel capability that provides a needed measure of protection against disruptions in the natural gas supply system. Yet the EPA's Building Blocks assume that output from these very facilities could be reduced by over 99%. Such a reduction cannot be sustained while maintaining reliable electric service to New York City. Congress recognized in the Energy Policy Act of 2005 that the population density of the New York City area, the percentage of the population that lives or works in very tall buildings and relies upon underground transportation, and the critical importance of

[1] Published in the Federal Register at 79 Fed. Reg. 34830 (June 18, 2014).

institutions located there intensify the need to maintain the reliability of New York's electric system. The EPA should do the same. [2]

The flaws with the Clean Power Plan that would compromise reliability in New York stem from key assumptions within the Building Blocks that are not technically sound and result in CO_2 emissions reduction targets for New York that are unreasonable and unworkable within the timeframes provided. The assumptions upon which the Building Blocks are based must be technically and economically sound for the CO_2 emissions reductions targets derived from them to be reasonable and consistent with the requirements of a reliable electric system. No amount of flexibility afforded in the manner in which New York State may seek to comply with the Clean Power Plan can make up for requirements that are inherently unreasonable because they are based on flawed assumptions in the Building Blocks.

New York has already reduced CO_2 emissions from its power sector by 41.6% below 2005 levels and generates approximately 53% of the electricity it uses on an annual basis from non-emitting resources. The state's generation fleet is the ninth cleanest in the country, and New York's commitment to the Regional Greenhouse Gas Initiative ("RGGI") calls for even further CO_2 reductions between now and 2020. New Yorkers currently pay the highest electric rates in the contiguous United States, including fees that are used to fund investments in clean energy and conservation that have contributed to New York's already low-carbon emissions profile.[3] The targets developed for New York under the Clean Power Plan for further CO_2 emissions reductions should recognize and appropriately reflect the significant efforts that have already been made in New York and the progress that has been achieved.

Overview of Comments

The essence of the Clean Power Plan is the CO_2 emissions reduction targets that it produces for each state and the timelines for achieving those targets. While details of the Building Blocks used to develop each state's target are the focus of many of the comments supplied to the EPA, the bottom line for each state is the target itself.

The EPA makes clear that it does not require or expect that states would necessarily use the specific means of the Building Blocks to achieve compliance with individual state targets. Nevertheless, the soundness of the assumptions underlying each of the Building Blocks is

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[2] Energy Policy Act of 2005, Pub. L. No. 109-58, Title XII, Subtitle A, 119 Stat. 594, 941 (2005) (including a savings clause specifically allowing New York to reliability standards exceeding national reliability standards); *see also* 151 CONG. REC. H6971 (daily ed. July 28, 2005) (statement of New York Rep. Eliot Engel in debate on the Energy Policy Act of 2005) ("I was pleased to have worked with my colleagues Mr. Towns and Mr. Fossella to preserve New York's high reliability standards strengthening the underlying electricity title. New York has unique needs that necessitate this provision including having a high concentration of load in a small geographic area. Additionally, nearly 40 percent of the State population lives in NYC and close to three-fourths work there and 3 million New Yorkers use the underground subway system every day. Finally, New York is home to the NYSE and other critical financial institutions.").

[3] Energy Information Administration, 2012 Total Electric Industry- Average Retail Price (cents/kWh), http://www.eia.gov/electricity/sales_revenue_price/pdf/table4.pdf.

critically important insofar as the Building Blocks are the functional rationale supporting the targets developed for each state.

As discussed below, there are flaws with the Building Blocks as they are applied to New York that the EPA must address in order to produce reasonable CO_2 emissions reductions targets. These flaws are compounded by the manner in which the individual Building Blocks interact with each other. Together these flaws produce emissions reductions targets for New York that would compromise reliability if pursued on the timeline established under the Clean Power Plan.

In these comments, the NYISO recommends conducting independent evaluations to ensure that the Clean Power Plan and the state proposals to implement it will not negatively impact reliability. The NYISO also provides specific recommendations to address faulty assumptions of the Building Blocks as applied to New York. Finally, the NYISO advocates for an appropriate rate-to-mass conversion methodology that will facilitate compliance with the requirements of the Clean Power Plan through mass-based programs like RGGI. Taken together, these recommendations would produce aggressive but achievable CO_2 emissions reduction targets for New York without jeopardizing reliability.

First, the EPA should seek a comprehensive review of the reliability impacts of the Clean Power Plan. The North American Electric Reliability Council ("NERC"), the independent body charged with establishing rules to maintain electric reliability, already has conducted a preliminary reliability assessment and outlined a proposal for further review. The FERC also should be involved in this review to assess both the reliability implications of the Clean Power Plan as well as its implications for a host of issues that fall within FERC's jurisdiction. In addition, the EPA should require that individual state plans be reviewed by the relevant ISO/RTO or another independent reliability planning organization prior to submission.

Second, the EPA should formalize in the final rule a reliability "safety valve" by which the implementation of a state plan could be adjusted, with new timeframes and goals set as necessary, if needed to accommodate unforeseen circumstances that otherwise could jeopardize reliability. The NYISO appreciates the EPA's stated interest in ensuring sufficient flexibility that states and sources can respond to unexpected circumstances, such as severe weather, but a formal process is necessary. In separate comments, the ISO/RTO Council ("IRC") provides details on what a reliability safety valve should entail. The NYISO recommends that the EPA adopt the IRC's recommendation, as it did when it adopted a reliability safety valve in its final Mercury and Air Toxics rule.

Third, the NYISO recommends the following adjustments to the Building Blocks to produce a target that accurately reflects how power is generated, transmitted, and used in New York, as described in greater detail below:

- Eliminate the heat rate improvements assumed in Building Block 1 for states like New York in which the capacity factors of the few remaining coal-fired units are very low.

- Adjust Building Block 2 requirements to avoid over-reliance on increased natural gas dispatch that would impair reliability and have an illogical, counterproductive impact on CO_2 emissions.

- Adopt the EPA's alternative approach to Building Block 3 or recalculate renewable energy requirements in Building Block 3 to provide credit for existing hydropower, consistent with New York's RPS policy.

- Remove the incorporation of "at risk" nuclear generation under Building Block 3 in the calculation of state CO_2 emissions targets.

- Revise the rate of incremental energy efficiency that is possible by 2030 in Building Block 4 to reflect the success and maturity of New York's energy efficiency efforts.

Fourth, the EPA should adopt a rate-to-mass conversion method that supports regional efforts, like RGGI, to harness market forces as an effective and efficient compliance tool.

The NYISO has no objection in principle to policies that would seek further reductions in CO_2 emissions, and it understands that New York could make important contributions to this effort. The NYISO encourages the EPA to carefully consider the comments offered here to ensure that the Clean Power Plan is based on technically and economically sound assumptions and implemented in a manner that achieves its objectives without compromising reliability.

Discussion

1. Reliability Review of Clean Power Plan and State Implementation Plans

The EPA should seek a comprehensive review of the reliability impacts of the Clean Power Plan. NERC has already conducted a preliminary reliability assessment and outlined a proposal for further review. The FERC should also be involved in this review to assess both the reliability implications of the Clean Power Plan as well as its implications for a host of issues that fall within FERC's jurisdiction.

In its separate comments, the IRC recommends review of state plans by the relevant ISO/RTO or another independent reliability planning organization and outlines criteria for ensuring the adequacy of these reliability reviews. The NYISO strongly supports these recommendations. Together these reviews would ensure that potential reliability issues arising in connection with the Clean Power Plan or from individual state implementation plans are identified and addressed early.

2. Reliability Safety Valve

The EPA also should adopt as part of its final rule a "reliability safety valve" ("RSV") process to provide states with the flexibility to modify their implementation plans to resolve or mitigate reliability-related issues. The EPA previously has recognized that additional flexibility

may be necessary to manage unforeseen issues as state plans are being implemented.[4] The NYISO appreciates the EPA's perspective on ensuring sufficient flexibility for states to respond to unexpected circumstances. However, a formal process is required to ensure that actions can be taken, without the initiation of an enforcement process, if implementing the state plan would result in negative impacts to state or regional grid reliability.[5] Maintaining electric reliability, on which the public health and safety depend, must be the top priority in implementing this proposed rule.

The NYISO recommends that the EPA adopt the RSV process set forth in the IRC comments. The RSV provides appropriate flexibility in the implementation of state plans to allow for the development and execution of solutions necessary to resolve or mitigate identified reliability issues. The NYISO recommends that the EPA adopt the IRC's recommendations, as it did when it adopted a reliability safety valve in its final Mercury and Air Toxics rule.

3. Recommended Adjustments to the Building Blocks

- **Building Block 1 – Heat Rate Improvements at Coal-Fired EGUs**

New York's few remaining coal-fired units effectively act as peaking units that are needed to meet peak demand during relatively few hours of the year. As explained below, the likely result of Building Blocks 1 and 2, as applied to New York, would be that these coal-fired EGUs would simply cease operating. This would have a significant adverse impact on reliability. The EPA should not assume improved heat rates from coal units with very low capacity factors like those in New York. During what remains of their operating lives, these units will continue to be vitally important resources.

Under Building Block 1, the EPA assumes that New York's coal-fired EGUs can improve (lower) their heat rates by 6% - a rate deemed by the EPA to be feasible nationwide.[6] New York's market structure, as well as the requirements of RGGI, already provide strong incentives for existing EGUs to improve operations and lower their heat rates in order to increase their profitability. Accordingly, New York generators have already made significant improvements in their heat rates. Were further heat rate improvements reasonably attainable, generators would have made them.

Market forces are already driving down the utilization of coal-fired EGUs, which are a diminishing portion of the generation mix in New York. In 2005 they produced 21,184 GWh, or 14% of the total output of the New York fleet. In 2013, this had shrunk to just 4,494 GWh or 3% of total output. There are six coal-fired EGUs still operating in New York. Three of these are operating under Reliability Support Service Agreements, as their continued operation has been

[4] Notice of Data Availability ("NODA") published on October 30, 2014.

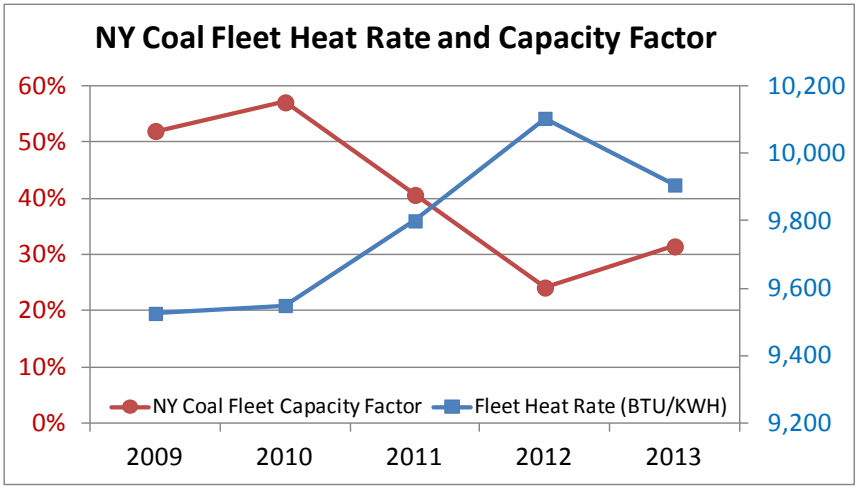
[5] The RSV could also be available to address unforeseen, extraordinary circumstances that manifest late in the state plan development stage if they would impact a State's ability to develop a state plan that meets its CO_2 goal or comply with a state plan that is under review by EPA.

[6] 79 Fed. Reg. 34856.

determined to be necessary to address local reliability issues. These arrangements are necessary because, even though their operation is critical, they are not cost-effective to operate without a special compensation agreement to keep them available. Plans are in place to retire one of these units, and the New York Public Service Commission is considering options to address the reliability issues related to the other two of these coal-fired units.

As New York's coal-fired units have run less in recent years, their heat rates have predictably increased. As Figure 1 demonstrates, New York's coal fleet has experienced a drop in its capacity factor and a corresponding increase in its heat rate as its percentage of the fleet's capacity has declined. [7]

FIGURE 1



Coal-fired EGUs with low capacity factors operate at higher average heat rates as they cycle to meet peak demand. As the EPA explains, EGUs operate at higher heat rates during periods of startup and shutdown.[8] When reduced demand for a fossil-fuel fired unit results in a lower capacity factor, heat rate improvements would be possible only by forcing its capacity factor higher through scheduling the unit to operate even when it is uneconomic to do so. This would be illogical and counterproductive, however, as it would actually *increase* the unit's total CO_2 emissions and require the unit to operate at an economic deficit.

Moreover, the further decline in operation of New York's coal fleet that would necessarily result from the assumptions in Building Block 2 would render any heat-rate improvement even less plausible. As discussed below, Building Block 2 contemplates a significant redispatch of energy from New York's coal-fired EGUs to NGCC EGUs. This would further decrease the capacity factor of coal-fired EGUs and further increase, not decrease, their heat rates. It is unrealistic to assume that fossil-fuel fired facilities can run fewer hours and run

[7] Coal fired units, as a general matter, are designed as base load units and their optimum thermal performance is at or near maximum output levels.

[8] EPA, GHG Abatement Measures TSD at 2-21, Doc. No. EPA-HQ-OAR-2013-0602-0437, June 2014.

more efficiently, a point that the EPA itself has acknowledged.[9] For these reasons, the NYISO encourages the EPA to eliminate the assumptions made in Building Block 1 for states like New York where an already low utilization rate is not conducive to heat rate improvements.

- **Building Block 2 – Dispatch of Natural Gas Combined Cycle Units.**

The EPA assumes a redispatch of New York's NGCC EGUs to a nameplate capacity factor of 70% in order to offset a significant amount of generation from coal, oil, and oil/gas-fired steam EGUs.[10] This illogical approach fails to account for important considerations relevant to New York. First, the assumed redispatch would reduce the output of the impacted steam facilities by over 99%, likely forcing the retirement of units that are critical to reliability.[11] Second, given the location of NGCC units within New York, the extent of the redispatch assumed would require not using available generation from non-emitting resources to "make room" for the NGCC output, undermining the intended impact on overall CO_2 emissions.

The EPA's assumed increase in the capacity factor for New York's NGCC EGUs would require a dramatic, highly-uneconomic redispatch that would compromise reliability and would actually require backing down lower emitting generation resources.[12] Most of New York's NGCC EGUs are located in the western part of the state along with the bulk of the state's hydropower and nuclear generation. Operating the NGCC EGUs at the levels assumed by the EPA would produce more electricity than the combined total of the demand in that portion of the state and the transmission transfer capacity to the areas of greater demand to the southeast. It is not possible to run NGCC resources at the levels assumed by the EPA without reducing the use of generation from non-emitting wind, hydropower, and nuclear units that are also located in the western portion of the state. It would be illogical and counterproductive to pursue such a redispatch, as it has the perverse effect of substituting NGCC generation for non-emitting renewable generation in the name of reducing CO_2 emissions.

In addition, increasing the output of New York's NGCC EGUs as contemplated by the EPA would require reducing the output of New York's coal, oil, and oil/gas-fired steam EGUs to

[9] Prescribing heat-rate improvements on units that make such a small contribution to New York's overall energy supply provides very little CO_2 reduction. A 6% improvement in the heat rate of New York's coal fleet saves only 250,000 tons/year because of the little time they run. New York's coal-fired EGUs currently emit approximately 4,000,000 tons of CO_2/yr.

[10] The EPA calculated its 70% capacity factor based on nameplate ratings, rather than dependable maximum net capacity ("DMNC") ratings, which is the more accurate and appropriate measure of a unit's potential output. This this figure climbs to approximately 88% when translated to the more commonly used DMNC capacity factor, more accurately indicating the extent of the EPA's assumed redispatch.

[11] Building Block 2's assumed redispatch would reduce output from coal-fired EGUs from 4,156,143 MWh/year down to 27,582 MWh/year, the equivalent of allowing just two days per year of generation from the Somerset Generating Station in Somerset, New York. Oil/gas-fired steam EGUs would reduce operation from 12,502,558 MWh to 82,973 MWh, equivalent to just three days per year of generation from Ravenswood Generating Station Unit 3. *See* EPA, Appendix 1 & 2, State Goal Data and Computation, Docket No. EPA-HQ-OAR-2013-0602-0255, June 18, 2014.

[12] As a point of reference, even when natural gas was at its lowest prices, from November 2011 through October 2012, the nameplate capacity factor of New York's NGCC EGUs rose to only 46%.

an extent that would undermine their economically viable and potentially lead them to retire. This would have serious adverse consequences for reliability. New York City depends on its oil/gas steam facilities, which make up the majority of in-city generation, to comply with several reliability rules specific to New York City. Coal, oil, and oil/gas-fired steam generation also provides valuable fuel diversity to the state as a whole. New York cannot simply discard these generation resources.

Existing oil/gas-fired steam EGUs located in New York City are necessary to comply with four mandatory local reliability rules. [13] These rules are designed to protect against the loss of electric load in the event that there is an interruption in the natural gas supply fueling generators in New York City or a forced outage on a transmission or generation facility serving this highly constrained area. Sufficient generation must be immediately available within New York City to ensure continued electric service to customers located there.

The first local reliability rule - Minimum Oil Burn - supported by gas tariffs and interconnection requirements for New York City - protects the electric system from sudden loss of electric load in the event that the local gas delivery system is unable to serve all of the generators that rely on it by requiring that certain units maintain alternate fuel capability. To prevent such a loss of electric load, these dual-fueled facilities are required either to run on oil or to enable their auto-swap capability under certain conditions in order to maintain generation supply should the gas supply be interrupted. The other three local reliability rules - Thunderstorm Alert, Second Contingency Unit Commitment and Locational Operating Reserves - protect against loss of electric load in the event that an electric transmission facility or generation facility serving New York City is suddenly forced out of service. These rules require the dispatch of generation located inside New York City to ensure reliability.

In 2012, there were 347 days when at least one of these reliability rules was invoked in the New York City area, requiring the operation of oil/gas-fired steam EGUs. The 99% reduction in the operation of New York City's oil/gas steam facilities necessitated by Building Block 2 would make it impossible to comply with the local reliability rules described above and would undermine reliability in New York City.

Dual-fuel generation also provides valuable diversity in New York's generating fleet, which is dominated by natural gas burning units.[14] High consumer demand for natural gas during periods of extreme cold weather over a large portion of the country can reduce the availability of natural gas for generation plants.[15] Maintaining some diversity in the fuel supply of New York's generation fleet reduces exposure to this potential scarcity and helps avoid

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[13] *See:* NYSCR Reliability Rules V. 33 April 10, 2014, Rules I-R1 through I-R4. These rules are protected by the savings clause of the Energy Policy Act of 2005 described above in Footnote 2.

[14] Coal-fired EGUs in Western New York also support the transfer capability of the transmission system to deliver more efficient and lower emission generation from upstate resources to the more populous southeast portion of the state

[15] This differs from the summer when demand for natural gas by retail customers is relatively low and there is usually excess capacity on the pipeline infrastructure available for gas-fired generation facilities.

interruptions in electric generation when natural gas availability is disrupted. This was vividly demonstrated during this past winter's polar vortex when severe and sustained cold weather threatened natural gas supplies to generators. Increased demand on New York's natural gas transmission infrastructure resulted in fuel interruptions to gas-fired EGUs when gas was redirected to higher priority uses such as home heating. [16] New York's oil/gas-fired steam units generated over 2,000 GWh while burning oil fuel during the polar vortex, demonstrating the importance of these resources to reliability.

Oil-fired generation was used to maintain reliable electric service to New York City during a total of 161 days last year. The EPA needs to ensure that its final goal for New York recognizes the significance of dual-fuel units to reliability and allows for them to run on oil when necessary because circumstances limit the availability of natural gas as a generation fuel.

- **Building Block 3 – Increased Use of New Renewable Generation**

Building Block 3 establishes a target for non-emitting generating capacity that a state could develop or retain from 2020 to 2030. The EPA outlines two approaches. The first approach relies on the EPA's estimates of potential development by region based on the Renewable Portfolio Standards ("RPS") of the states located there. The alternative approach would rely on a state-by-state assessment of the technical and economic potential for development of additional renewable generation. The NYISO recommends that the EPA adopt the proposed alternative approach.

The alternative approach is more appropriate as it uses a more precise analysis of the technical and economic potential for the development of additional renewable generation in each state. If the regional estimates method is adopted instead, then the EPA must acknowledge the fact that New York's RPS recognizes existing hydropower resources.[17]

The EPA's decision to exclude existing hydropower facilities "[b]ecause RPS policies were implemented to stimulate the development of new RE generation"[18] is directly contrary to policies in the Northeast where existing hydropower is a major component of RPS compliance. Indeed, hydropower accounts for nearly 70% of the New York's compliance with its RPS. New York hydropower generation is five times greater than the state's coal-fired generation and substantially larger than the State's existing non-hydropower renewable resources – over seven times New York's wind generation and nearly 500 times greater than solar generation within the

[16] Gas became so scarce that for 18 days during the extended and repeated cold snaps of this past winter, oil was actually less expensive than natural gas, per MMBTU.

[17] DSIRE, New York Incentives/Policies for Renewables & Efficiency – Renewable Portfolio Standard, http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=NY03R&re=0&ee=0 (noting that of New York's 30% RPS, "approximately 20.7% of the target will be derived from existing renewable energy facilities [not all of which are hydro] http://www.dps.ny.gov/rps/Appendix-B-2-19-04.pdf . . .").

[18] GHG Abatement Measures TSD at 4-5.

State.[19] Other states in the Northeast also incorporate existing hydropower into their RPSs to varying degrees.[20]

Failing to account for the role of hydropower in the RPS requirements that form the EPA's regional renewable generation targets results in a substantial overestimation of the amount of renewable resources that can be added in the Northeast, and particularly in New York. Using this approach, the EPA assumes that New York can increase its renewable generation from the State's 2012 baseline of 5,192,427 MWh (4% of New York's 2012 generation) to 24,261,905 MWh (18% of New York's 2012 generation). This equates to an increase in renewable generation of 19,072,478 MWh – 360% more MWh than these renewables generated in 2012.

The NYISO recommends that the EPA adopt its state-by-state assessment of renewable generation technical and market potential to quantify the amount of new renewable generation in each state unless it acknowledges the role existing hydropower plays in existing RPS.

- **Building Block 3 - Preservation of "At Risk" Nuclear Generation**

Building Block 3 assumes the preservation of 5.8% of nuclear generation across the country that the EPA considers to be "at risk" for retirement. The EPA applies Building Block 3 by incorporating 5.8% of a state's nuclear capacity into its target CO_2 emissions rate. The target rates in states that do not have any nuclear generators are not similarly adjusted. This adds 2,410,637 MWh of generation into the denominator of the formula for New York's target CO_2 emissions rate, having the effect of lowering it.

Reducing CO_2 emissions goals in only those states with nuclear generation by assuming a uniform amount of "at risk" nuclear generation that could be preserved, without any assessment of whether this is the case, is arbitrary and capricious and has unwarranted and inequitable impacts on state targets. Furthermore, this approach fails to recognize that retention and retirement decisions rest largely with generation owners and the Nuclear Regulatory Commission, rather than the states.

This element of Building Block 3 will have no effect in the majority of states that do not have nuclear generation facilities. In states that do, the EPA's assumption regarding preservation of "at risk" nuclear will increase the burdens of the Clean Power Plan, effectively penalizing those states for their use of these non-emitting resources.

When a nuclear unit ceases to operate, the affected state must replace the nuclear unit's output. In the near term, the needed replacement energy likely will come from existing units and an RSV may have to be triggered. In the longer term, some portion of the replacement

[19] *See* NYISO, 2014 Load & Capacity Data "Gold book" at 56.

[20] *See e.g.* New Hampshire Incentives/Policies for Renewables & Efficiency – Renewable Portfolio Standard, http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=NH09R&re=0&ee=0, Maine Incentives/Policies for Renewables & Efficiency – Renewable Portfolio Standard, http://www.dsireusa.org/incentives/index.cfm?re=0&ee=0&spv=0&st=0&srp=1&state=ME, Rhode Island Incentives/Policies for Renewables & Efficiency – Renewable Portfolio Standard, http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=RI08R&re=0&ee=0.

energy would have to come from non-emitting resources in order to meet the state's Clean Power Plan target. Lowering state target rates in this manner penalizes states that currently operate non-emitting nuclear facilities by requiring them to deploy additional renewable generation and energy efficiency in the event that their nuclear facilities are later decommissioned. The EPA should not incorporate any "at risk" nuclear generation into New York's target CO_2 emissions rate.

- **Building Block 4 – Incremental Increase in Demand-Side Energy Efficiency**

Building Block 4 assumes a state can annually increase energy efficiency by 1.5%. The ramp rate embedded in the design of this Building Block does not acknowledge the maturity of New York's well established energy efficiency programs. Since 1999, New York State estimates that it has invested over $4.5 billion in energy efficiency investments with an achieved cumulative annual energy savings of 9,272,000 MWh. Notwithstanding the EPA's statements to the contrary, [21] experience in New York has shown that efficiency gains begin to slow once this level of investment has been achieved. The EPA should allow New York a ramp rate to 2030 that reflects its already mature efficiency program.

As currently designed, this Building Block assumes New York would reduce demand by 11.8%, or 18,105,870 MWh to receive credit for 16,847,624 MWh, in 2029 and thereafter through cumulative energy efficiency measures. While New York is presently increasing energy efficiency by about 1,200,000 MWh/year[22] (some of which is naturally occurring), the NYISO does not believe that this level of improvement can be sustained through 2029, and attempting to do so would be prohibitively expensive. The NYISO understands that New York State budgeted $2.5 billion in incentives and administrative costs for its energy efficiency programs for 2008 to 2015. New York reportedly expected to spend just $145 per MWh-saved through 2015, but in 2011 utility budgets were increased to an average $351 per MWh for the last four years of the program.[23] The EPA's assumption that New York can continue to spend this much money on energy efficiency and reach Building Block's 4 efficiency target by 2029 should be revised.

The EPA should acknowledge New York energy efficiency gains by revising the ramp rate required for further investment to 0.5%. In addition the EPA should credit each MWh of energy efficiency towards meeting New York's goal regardless of its ratio of generation to sales.

[21] "Likewise, states with relatively well-established demand-side EE programs would be able to build on those programs more quickly than states with less established programs, and would be closer to, or in some cases already achieving, the level of demand-side energy efficiency reflected in the state goals." 79 FR 34918.

[22] This assumes a ten year average.

[23] These are the costs of installation in the year of installation; they do not account for savings over the life an installation. *See* October 25, 2011 PSC Order in 07-M-0548.

4. Mass-Based Emissions Limits

The EPA indicates that regional carbon control regimes like RGGI are acceptable approaches for states to use to comply with the requirements of the Clean Power Plan.[24] By requiring that CO_2 emission allowances be acquired by all CO_2 emitting generators, RGGI has effectively embedded the costs of acquiring these emissions allowances in the economic dispatch of electric facilities in the Northeast. The more CO_2 a unit emits, the more allowances it must acquire. Allowances are periodically offered by auction, and the auction proceeds are used to support development of energy efficiency and renewable resource initiatives. In this way, RGGI serves the EPA goal of promoting new renewable generation and increased energy efficiency.[25]

The EPA should support the use of RGGI-type programs by adopting an appropriate mass-based option under the Clean Power Plan. The NYISO agrees with the EPA that a mass-based goal should be equivalent to a rate-based goal, and should not penalize or reward states that choose one approach over the other. By ensuring that rate- and mass-based goals are equivalent, states will have greater flexibility to satisfy the objectives of the Clean Power Plan.

In its simplest form, a rate-based goal can be calculated as:

$$\text{Mass} / \text{Generation Equivalents} = CO_2 \text{ Emissions Rate}$$

In this form, "Generation Equivalents" includes electric generation output from affected EGUs, new renewables, new energy efficiency, and at risk nuclear generation. In calculating an equivalent mass-based goal all "Generation Equivalents" should simply be moved to the other side of the equation as follows:

$$\text{Mass} = CO_2 \text{ Emissions Rate} * \text{Generation Equivalents}$$

If the values for the "CO_2 Emissions Rate" and "Generation Equivalents" remain the same, then the mass that can be emitted should also remain the same, regardless of whether a rate-based or mass-based compliance metric is used. However, the conversion method outlined in the EPA's Technical Support Document issued in November 2014, would limit the amount of "Generation Equivalents" used to develop the state's rate-based goal, thereby lowering the amount of emissions that may be emitted by affected EGUs in the state.

The EPA incorrectly assumes that energy efficiency and renewable generation will reduce EGU output on a one-for-one basis. For states like New York, where the sites most suitable for further development of renewables are geographically removed from the load

[24] Plans that do directly assure that affected EGUs achieve all of the required emission reductions (such as the mass-based programs being implemented in California and the RGGI states) would also be approvable provided that they meet other key requirements, such as achieving the required emission reductions over the appropriate timeframes. 79 FR 34838, 34848.

[25] As an example, the RGGI states' implementation of their mass based emission budget trading program raises proceeds through allowance auctions and uses those proceeds to advance programs promoting and expanding end-use energy efficiency. 79 FR 34900.

centers, this is not the case. Moreover, intermittent renewable resources must be backed up to a significant degree by units that can quickly replace their generation output, which are most often fossil fuel units. EGU output is not replaceable on a one-for-one basis with renewables and energy efficiency.

Most of the existing renewable generation resources in New York are north and west of the major load centers in the state, and this is the region most suitable for further development of renewable resources. Transmission capacity from this area to the area of greatest demand in the southeast is limited, and a one-for one offset of renewable energy for downstate EGUs cannot be achieved.

Additionally, the dependence of renewable generation on variable natural forces does not allow it to meet demand all the time. Its intermittency makes it an unsuitable replacement to the fossil fuel units that provide spinning reserves that are needed to maintain reliability across the state and especially in New York City. Therefore, intermittent renewable resources must be backed up to a large extent by dispatchable units, which typically operate on fossil fuel. EGU output is not replaceable on a one-for-one basis with renewables and energy efficiency.

The inability of renewable generation or energy efficiency to offset affected EGU generation on a one-for-one basis is demonstrated by the NYISO's 2010 wind generation study ("NYISO Wind Study").[26] It was found that 8,000 MWs of installed wind would produce 21,829.3 GWhs of wind, but would only displace 15,500 GWhs of fossil fuel.[27] This means that 100 MWhs of wind generation in New York displaces only approximately 71 MWhs of fossil fuel generation. On a capacity basis, the NYISO Wind Study found that 1 MW of wind is equivalent to approximately 0.2 to 0.3 MWs of conventional generation.[28] This requires that 75% to 80% of the nameplate capacity of wind generation be backed up by conventional , dispatchable generation in order to maintain reliable electric service.[29]

While the NYISO Wind Study does not directly address the displacement of affected EGUs by the Building Blocks of the Clean Power Plan, it shows that New York cannot sustain a one-for-one displacement of EGUs by renewable resources. Instead of using a one-for-one displacement, the EPA should allow States to use all "Generation Equivalents" that are available.

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[26] "Growing Wind." Available at: http://www.nyiso.com/public/webdocs/media_room/press_releases/2010/Child_New_York_Grid_Ready_for_More_Wind_093010/GROWING_WIND_-_Final_Report_of_the_NYISO_2010_Wind_Generation_Study.pdf

[27] NYISO Wind Study, Section 5.6.3. This includes some generation from the unregulated gas turbines, making the effect more pronounced within the context of the Clean Power Plan.

[28] NYISO Wind Study, p. iv.

[29] NYISO Wind Study, p. 91. This is because the NYISO Wind Study found that on a capacity basis 1 MW of wind is equivalent to approximately 0.2 to 0.3 MW of conventional generation.

Conclusion

As proposed, the Clean Power Plan presents potentially serious reliability implications for New York, most acutely in the densely populated New York City area. Key assumptions within the Building Blocks are not technically sound and result in CO_2 emissions reduction targets for New York that are unreasonable and unworkable within the timeframes provided. These flaws with the Clean Power Plan would compromise reliability in New York. The assumptions upon which the Building Blocks are based must be technically and economically sound for the CO_2 emissions reductions targets derived from them to be reasonable and consistent with the requirements of a reliable electric system.

While the EPA's approach to the Clean Power Plan appropriately affords states significant flexibility in how to achieve the reductions that they are assigned, it is nevertheless critical that the Building Blocks underlying the individual state targets be rooted in a realistic understanding of the bulk electric system and its capabilities. No amount of flexibility afforded in the manner in which states may seek to comply with the Clean Power Plan can make up for requirements that are inherently unreasonable because they are based on flawed assumptions.

As described above, the EPA should seek a comprehensive review of the reliability impacts of the Clean Power Plan and require that individual state plans be reviewed by the relevant ISO/RTO or another independent reliability planning organization prior to submission. The EPA should also include a reliability "safety valve" by which the implementation of a state plan could be interrupted, with new timeframes and goals set as necessary, if needed to accommodate unforeseen circumstances that could otherwise jeopardize reliability.

The assumptions upon which the Building Blocks are based must be revised to be technically and economically sound. With the revisions recommended herein, the EPA's CO_2 emissions reductions target for New York will be reasonable and able to be implemented while maintaining electric reliability. It is important that the EPA revisit the Building Blocks and the targets set for New York. The EPA should:

- Eliminate the heat rate improvements assumed in Building Block 1 for states like New York in which the capacity factors of the few remaining coal-fired units are very low.

- Adjust Building Block 2 requirements to avoid over-reliance on increased natural gas dispatch that would impair reliability.

- Adopt the alternative approach to Building Block 3 or recalculate renewable energy requirements in Building Block 3 to provide credit for existing hydropower, consistent with New York's RPS policy.

- Remove the incorporation of "at risk" nuclear generation under Building Block 3 in the calculation of state CO_2 emissions targets.

- Revise the rate of incremental energy efficiency that is possible by in Building Block 4 to reflect the maturity of New York's energy efficiency effort.

Finally, the EPA should ensure there are no barriers to RGGI and similar programs serving as the means of implementing the Clean Power Plan by adopting an appropriate formulation for mass-based approaches to compliance.

Respectfully submitted,

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