

There is evidence already that the Proposal would achieve its stated goal “to encourage the preservation of the environmental values or attributes of zero-emissions nuclear-powered electricity generating facilities.” Immediately following the Proposal’s release, Constellation Energy Nuclear Group (“CENG”), owner of the R.E. Ginna Nuclear Power Plant and the Nine Mile Point Nuclear Generating Station, announced its intention to invest \$200 million to enable the long-term operation of these facilities if the program is approved. Prior to the Proposal, CENG had identified Ginna and Nine Mile Point Unit 1 as facilities that were facing early closure from economic pressures.

Also after the Staff Proposal, Entergy Corporation (“Entergy”) announced that it was in discussions with Exelon Corporation (“Exelon”) to sell the James A. FitzPatrick Nuclear Power Plant. The FitzPatrick plant is in the process of being shut down by January 2017. The potential sale would result in the continued operation of the plant, preserving a major source of non-emitting generation in New York as well as more than 600 jobs in Oswego County. This sale would be predicated on New York having an approved Clean Energy Standard.³

We encourage the Public Service Commission to adopt this Proposal and enable these investments to move forward.

I. New York’s Environmental Goals

New York has set aggressive environmental goals. Specifically, the New York State Energy Plan⁴ established three targets for 2030:

- A 40 percent reduction in greenhouse gas (GHG) emissions from 1990 levels,
- 50 percent of electricity generation from renewable energy sources, and
- 600 trillion BTU increase in statewide energy efficiency.

New York’s nuclear power plants are essential to meet the first target. In 2015, these plants produced 44.6 million megawatt-hours of reliable, non-emitting electricity which represented 59 percent of the state’s clean electricity.⁵ The use of nuclear power in New York avoids the need for fossil fuel generation which would emit around 26 million additional tons of carbon dioxide.⁶

³ Entergy, “Entergy in Discussions for the Potential Sale of the James A. FitzPatrick Nuclear Power Plant to Exelon,” July 13, 2016, available at: <http://www.energynewsroom.com/latest-news/entergy-discussions-potential-sale-jamesfitzpatrick-nuclear-power-plant-exelon/>; Exelon, “Exelon Says New York Rules Could Preserve Plants, Open Door for Hundreds of Millions in Investment,” July 13, 2016, available at: <http://www.exeloncorp.com/newsroom/fitzpatrick-release-2016>.

⁴ New York State Energy Planning Board, *The Energy to Lead: 2015 New York State Energy Plan*.

⁵ ABB Velocity Suite.

⁶ Mark Berkman and Dean Murphy, “New York Nuclear Plants Contribution to the State Economy,” The Brattle Group (September 2015) (“Brattle Group September 2015 Report”), available at

The loss of even a single nuclear plant would compromise New York’s ability to meet its goal of a 40 percent reduction in GHG emissions.

Governor Cuomo recognized the challenge that New York would face if it were to lose nuclear plants. In his letter directing the Department of Public Service to develop a Clean Energy Standard,⁷ he said that the closure of nuclear facilities “would eviscerate the emission reductions achieved through the state’s renewable energy programs, diminish fuel diversity, increase price volatility, and financially harm host communities.”

II. Nuclear Benefits

Including nuclear energy in the state’s Clean Energy Standard produces immense benefits for New York. The Staff estimates that the gross benefits of retaining the at-risk nuclear plants in the first two years of the program are approximately \$5 billion. Weighted against an estimated cost of less than a billion dollars, the program generates benefits in excess of five to one. Of course, the benefits of this program will continue to accrue beyond the first two years. Every additional year of nuclear plant operation will produce benefits in avoided emissions, employment, economic activity and state and local tax payments.

Nuclear plants in New York provide 18,000 jobs through direct and secondary employment. They contribute \$2.47 billion to the state’s gross domestic product, \$3.77 billion to gross economic output, and their effect on the economy leads to approximately \$113 million in additional state tax revenue beyond what an alternative electric supply source would provide.⁸

Maintaining the nuclear facilities that are at risk of closure will keep power prices down for customers in the state. In a recent update to its analyses, the Brattle Group estimates that electricity prices in New York would increase by 7.2 percent if the upstate nuclear plants were to close as their power would then be provided by more expensive sources. Such a rate increase would increase electricity costs in the state by \$1.7 billion per year. As Brattle notes, the initial annual cap on ZEC payments is \$482 million per year, “[t]hus Staff’s proposed program to preserve the upstate nuclear plants would actually save consumers money on power costs.”⁹

By preserving existing generating assets, additional infrastructure investments will not be needed to replace the large amount of electricity produced by these plants. The Proposal will allow New York to maintain existing nuclear energy facilities, thereby avoiding imposing additional costs

<http://www.nuclearmatters.com/resources/reports-studies/document/Nuclear-Matters-Report-New-York-Value-of-Nuclear.pdf> at 3.

⁷ Letter from Governor Andrew M. Cuomo to Audrey Zibelman, chairman of the New York State Department of Public Service, December 2, 2015.

⁸ Brattle New York Report at 3.

⁹ The Brattle Group, “Preliminary Comment on New York Department of Public Service ‘Staff’s Responsive Proposal for Preserving Zero-Emissions Attributes,’” July 2016.

on consumers not just for replacement electric generation but also the infrastructure that would be needed to support that capacity. If nuclear plants were to be replaced with new capacity, either renewables or natural gas, the electric transmission system would need to expand to integrate these sources. Increased reliance on natural gas would entail the need for additional pipelines in the state.

Any replacement capacity for closed nuclear facilities will take years to come online. When nuclear plants have closed recently, the immediate response has been consistent – nuclear generation has been replaced by natural gas with attendant emission increases. For example, nuclear generation in ISO New England declined by 5.3 million MWh in 2015 compared to 2014 when Vermont Yankee was in operation. This was offset by natural gas use increasing by 5.7 million MWh and carbon emissions by 5% in New England in 2015 following the loss of Vermont Yankee.¹⁰ The closure of the San Onofre Nuclear Generating Station resulted in higher electricity bills and increased emissions. California consumers paid \$350 million more for electricity following the closure and carbon emissions increased by 9 million tons.¹¹

Nuclear power plants provide round-the-clock baseload electricity without emitting greenhouse gases and other pollutants. In 2015, the New York’s nuclear plants operated with a 96.5 percent capacity factor, far outpacing the availability of other generation sources. Nuclear stations also provide important benefits to the grid including reactive power and voltage support that keep the entire electricity system functioning.

III. Economic Pressures

Multiple factors have combined to create wholesale energy markets that do not adequately compensate nuclear generation for providing zero-emission, safe and reliable baseload electricity. First, although New York, like the United States generally, recognizes the need for zero-carbon electricity, the purchase of electricity in the state does not adequately consider carbon intensity.¹² The low cost of natural gas, low (in some cases, flat) demand growth, and transmission constraints have further eroded wholesale electricity prices.¹³ Other market

¹⁰ ISO New England generation data available at: <http://www.iso-ne.com/isoexpress/web/reports/operations/-/tree/daily-gen-fuel-type>; Emissions data from U.S. Environmental Protection Agency available at: <https://ampd.epa.gov/ampd/>.

¹¹ Lucas Davis and Catherine Hausman, “Market Impacts of a Nuclear Power Plant Closure,” *American Economic Journal: Applied Economics*, 8(2): 92-122, 2016 available at: <http://dx.doi.org/10.1257/app.20140473>; Lucas Davis and Catherine Hausman, “The value of transmission in electricity markets: Evidence from a nuclear power plant closure,” June 16, 2014, available at: <http://voxeu.org/article/value-electricity-transmission-evidence-power-plant-closure>.

¹² State of New York Public Service Commission Order Further Expanding Scope of Proceeding and Seeking Comments, Case 15-E-0302, February 24, 2014 at 2 (“Unfortunately, the important zero-emission and other beneficial attributes of these facilities are not adequately compensated in the current competitive electric wholesale market structure.”).

¹³ The Brattle Group September 2015 Report at 1.

distortions, including out-of-market pricing for some requirements and targeted subsidies for some renewables further exacerbate the problem.¹⁴

As a result, some nuclear plants are struggling to continue operation and are at risk of being shut down well before their useful life is over.¹⁵ Outside of New York, some plants have already been closed; others have announced that they will soon do so. In 2013, Dominion Resources closed its nuclear plant in Kewaunee, Wisconsin, for economic reasons.¹⁶ Entergy shut down its Vermont Yankee nuclear plant in December 2014, and announced last fall that it will close its Pilgrim nuclear plant in Massachusetts by June 2019. In Illinois, Exelon has announced the planned retirement of its nuclear plants at Clinton and Quad Cities.¹⁷

Nuclear plants in New York face these same difficulties.¹⁸ As the Public Service Commission explained:

The owners of some nuclear facilities in the State have indicated the intent to retire facilities, stating, among other things, an inadequacy in the wholesale electric market for valuing zero-emission electric energy resources. [footnote omitted] Those facilities currently provide important contributions towards the baseline of clean energy facilities in the State's electric power portfolio. Loss of these facilities in the short-term would undermine progress towards meeting the State's clean energy goals.¹⁹

The economic pressures have taken their toll on New York's nuclear facilities. Entergy announced in November 2015 that it would close its FitzPatrick plant in Scriba in light of "continued deteriorating economics." Although the plant's operating license authorizes it to run through 2034, Entergy notified the Nuclear Regulatory Commission of its plan to cease operations on January 27, 2017.²⁰ Similarly, CENG has warned the Public Service Commission that it has not yet made fuel purchases that would enable the continued operation of the Ginna plant and Nine Mile Point Unit 1, and that it would only be prudent to do so under an established CES.²¹

¹⁴ See Frank Huntowski, Aaron Patterson, and Michael Schnitzer, "Negative Electricity Prices and the Production Tax Credit" The NorthBridge Group (2012).

¹⁵ The Brattle Group September 2015 Report at 3.

¹⁶ Matthew L. Wald (May 7, 2013) "As Price of Nuclear Energy Drops, a Wisconsin Plant Is Shut," *The New York Times*.

¹⁷ See, e.g., Exelon, "Exelon Announces Early Retirement of Clinton and Quad Cities Nuclear Plants," <http://www.exeloncorp.com/newsroom/clinton-and-quad-cities-retirement> (June 2, 2016).

¹⁸ NYPSC February 24, 2016, Order, at 2; New York Department of Public Service, *Staff White Paper on Clean Energy Standard*, Case 15-E-0302, January 25, 2016 at 28.

¹⁹ NYPSC February 24, 2016, Order at 2.

²⁰ Entergy letter to U.S. Nuclear Regulatory Commission, March 16, 2016.

²¹ Harris Beach letter on behalf of Constellation Energy Nuclear Group to Kathleen Burgess, New York Public Service Commission, Case 16-E-0270, June 13, 2016.

Against this backdrop, the Staff Proposal creates the conditions that will be necessary for these nuclear facilities to continue operations for the long-term. By establishing a price signal for the non-emitting attribute that they provide to New York, the CES program will create the conditions to allow nuclear power to help meet New York's energy goals.

IV. Policy Design

The policy framework described in the Proposal has many commendable features.

The most significant aspect of the program is that the methodology actually values the non-emitting attribute of nuclear generation. By taking the social cost of carbon as the starting point for determining ZEC values, Staff ensures that the price signal will be a direct reflection of the value that nuclear energy is providing in meeting New York's goals. This price signal will ensure that carbon reduction will receive the proper consideration when owners make investment decisions for nuclear facilities. This is a notable improvement over the initial Staff approach in the January White Paper²² that sought to base the credits on the expected difference between market revenues and going-forward costs.

Also of note is the duration of the CES program. By laying out a 12-year duration for the program, Staff's Proposal provides a durable price signal that will reduce uncertainties that would inhibit an owner from making long-term investments. The time horizons created by the ZEC valuation methodology will enable owners to amortize capital investments with increased confidence that the plant will be in operation through 2029.

The Proposal represents an improvement from the January White Paper in recognizing that all nuclear energy facilities in New York provide benefits to the state. In establishing a methodology that would allow for the inclusion of downstate nuclear units, the Proposal is more equitable and defensible.

Although the benefits to the state will far exceed the program's costs, the Proposal includes a provision to reduce the value of the ZEC should market revenues increase over time. The CES protects consumers in other ways as well. For example, the calculated ZEC price for the first two years of the program is lower than credits provided to renewable electricity by New York in recent procurements.

The Proposal developed by the Staff could serve as a model for other states as they evaluate how to preserve non-emitting generation into the future. While a holistic policy that would allow

²² New York Department of Public Service, *Staff White Paper on Clean Energy Standard*, Case 15-E-0302, January 25, 2016.

consistency across states would be the ideal, New York is showing that states can take action before such a national framework is available.

V. Conclusion

The Staff Proposal to establish a CES will create the conditions that will allow nuclear energy to continue its contribution to meeting New York's clean energy goals while providing immense economic benefits to the state and the communities that host nuclear facilities. The announcements made by the state's nuclear plant owners following the release of this Proposal indicate that its acceptance will lead to the investment needed to preserve these non-emitting assets.

In order for the plants facing closure to avoid early retirement, it is incumbent on the Public Service Commission to adopt this Proposal without delay. If the Commission fails to enact this program, the upstate nuclear plants that are scheduled for shutdown will have no choice but to complete that process.

The Commission has moved swiftly to reach this stage and now is in a position to enact a program that will accomplish the goals it set out to achieve.

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