

**BEFORE THE
STATE OF NEW YORK PUBLIC SERVICE COMMISSION**

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

**COMMENTS OF CONSTELLATION ENERGY NUCLEAR GROUP, LLC
CONCERNING DEPARTMENT OF PUBLIC SERVICE STAFF'S JULY 8, 2016
RESPONSIVE PROPOSAL**

Pursuant to the Secretary's *Notice Soliciting Additional Comments*,¹ Constellation Energy Nuclear Group, LLC ("CENG") hereby submits its comments on the Department of Public Service ("DPS") Staff's ("Staff") *Responsive Proposal for Preserving Zero-Emission Attributes* (the "Responsive Proposal").²

INTRODUCTION

CENG appreciates the opportunity to comment on Staff's Responsive Proposal, which offers a constructive framework to advance the State's environmental interests by preserving existing sources of emissions-free generation. The Nuclear Tier program contemplated by the Responsive Proposal, when adopted by the Public Service Commission (the "Commission"), will bring billions of dollars of net benefits each year to New York's consumers and result in lower rates.

As the Responsive Proposal correctly notes, the loss of the upstate nuclear facilities would result in increased air pollution carrying a social cost of nearly \$750 million *per year*.³ In addition,

¹ Case 15-E-0302: *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard*, Notice Soliciting Additional Comments (July 8, 2016).

² Case 15-E-0302: *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard*, Staff's Responsive Proposal for Preserving Zero-Emission Attributes (July 8, 2016) ("Responsive Proposal").

³ Responsive Proposal, at 1; *see also* Case 15-E-0302: *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard*, CENG Initial Comments on White Paper (Filed April 22, 2016), Exhibit A, the Brattle Group, "New York's Upstate Nuclear Power Plants' Contribution to the State Economy," at 1, 12 (the "Brattle Report")

these facilities produce approximately \$1.7 billion annually in direct economic benefits and \$144 million in tax benefits, *beyond* the value of the environmental benefits.⁴ In fact, the total benefits of the Responsive Proposal exceed the costs by a ratio of 5 to 1.⁵

Indeed, two separate studies demonstrate that the benefits of the proposed Nuclear Tier program vastly exceed its costs: one study by the Brattle Group and one by DPS Staff.⁶ A third study by Navigant Consulting confirms that, without the upstate nuclear plants, New York’s system costs will be significantly higher, and New York will go from being one of the Nation’s leaders in producing zero-emissions energy to being unable to meet Clean Air Act requirements without relying on imports from neighboring states.⁷ All in all, the environmental benefits and direct economic benefits over the life of the program total approximately \$25 billion.⁸ Thus, Staff correctly concludes that “[t]he benefits of paying for the zero-emission attributes far exceed the costs.”⁹

Despite overwhelming support from climate scientists, New York’s utilities, business groups, labor, communities, and zero-emission generators, a handful of entities oppose the program. These fall into three groups. The first is nuclear energy opponents, who will never support the program because they want to see the plants closed—even in the face of Staff’s data and climate

⁴ Brattle Report, at 1.

⁵ Responsive Proposal, at 2.

⁶ Brattle Report, at 12; Case 15-E-0302: *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard*, Clean Energy Standard White Paper – Cost Study (April 6, 2016) at 84, 102-07 (the “DPS Cost Study”).

⁷ Case 15-E-0302: *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard*, Comments of Consolidated Edison Company of New York, Inc., Niagara Mohawk Power Corporation d/b/a National Grid, and Orange and Rockland Utilities, Inc. regarding the Clean Energy Standard White Paper – Cost Study (Filed June 6, 2016), Exhibit A, Navigant Consulting Inc., “Achieving New York State’s Clean Energy Policy Objectives,” at 13, 15 (“Navigant Report”).

⁸ Brattle Report, at 1 (“New York consumers would pay ... almost \$15 billion in the next ten years (on a present value basis) absent the Upstate nuclear plants”; the program will “avoid almost 16 million tons of CO2 emissions annually, that equates to a societal value of almost \$700 million annually based on federal estimates”; and the plants “are responsible for \$144 million in net state tax revenues annually”).

⁹ Responsive Proposal, at 2.

scientists' warnings that the loss of the plants would cause devastating harm by increasing carbon pollution. A number of these opposing entities are hoping that, by forcing delays in the Commission's work, they will be able to seal the fate of a number of units slated for retirement.

A second group of opponents, which include fossil-fueled generators, is motivated by the profits its members would earn if the plants close and energy prices spike. Price increases mean more revenues for fossil-fueled generators. While their desire to profit is understandable, it is also at odds with the State's environmental goals and customers' interests.

Finally, some parties argue that the Responsive Proposal will increase costs to consumers, based on a false *status quo* in which all the plants continue to operate. The real *status quo* is that plants will close without this program, and New York will face billions of dollars annually in higher costs and lost revenues as a result, not to mention dirtier air. Indeed, the Brattle Group found that "electricity costs for New York consumers would average \$1.7 billion *higher* without the upstate nuclear plants," as resources with higher short-run variable costs would be called upon to make up for the lost power production.¹⁰ Thus, Staff's Responsive Proposal will actually *save* consumers money.

Moreover, now is the time to invest in New York's clean energy future. The average price of electricity to end users in New York has fallen approximately 18 percent over the last two years. That reduction more than covers all program costs.¹¹

With respect to program structure, CENG believes the Responsive Proposal provides a constructive framework for moving forward. In particular, CENG supports the concept of basing zero-emission credit ("ZEC") prices on the social cost of carbon, and adjusting the ZEC price

¹⁰ Brattle Group, "Preliminary Comment on New York Department of Public Service "Staff's Responsive Proposal for Preserving Zero-Emissions Attributes, at 1 (emphasis added). (Attached as Exhibit A).

¹¹ *Compare* Electric Power Monthly tbl. 5.6.B, U.S. ENERGY INFORMATION ADMINISTRATION (June 2016), available at <http://www.eia.gov/electricity/monthly/pdf/epm.pdf>, with Electric Power Monthly tbl. 5.6.B, U.S. ENERGY INFORMATION ADMINISTRATION (June 2014), available at http://www.eia.gov/electricity/monthly/current_year/june2014.pdf (comparing April YTD figures for all sectors).

downward to account for any future increases in forecasted energy and capacity prices. Compensating nuclear facilities based on the social cost of carbon is consistent with the program's environmental purpose and appropriately values the environmental attribute that nuclear facilities provide. And adjusting the ZEC price downward in the event that forecasted energy prices rise in the future ensures that the program will remain affordable for consumers.

Notwithstanding our support for this pricing formula, however, CENG notes that it shifts significantly more risk onto participating generators than other constructs proposed in this proceeding. For example, under the original Staff proposal, the price of ZECs was to be determined based on a particular unit's "anticipated operating costs," a figure that would be "updated every year," less "forecasted wholesale prices."¹² Coupling ZEC pricing to the difference between anticipated unit-specific operating costs and projected wholesale revenues still left participating generators with significant market and operational risks as described in CENG's April 22 Comments,¹³ but it provided a revenue stream more likely to cover facility costs. The Responsive Proposal, by contrast, leaves CENG exposed to the risk of unanticipated operating costs. The Staff White Paper also allowed ZEC prices to rise if forecasted energy prices fall. But the Responsive Proposal allows only a one-sided adjustment to ZEC prices: they can be reduced below the social cost of carbon in the event that forecasted wholesale prices rise, but cannot increase above the social cost of carbon in the event that forecasted wholesale prices fall.

CENG appreciates Staff's efforts to identify a workable framework that appropriately compensates nuclear facilities for the valuable environmental attributes they provide to New York consumers, while at the same time protecting consumers if energy prices rise.

¹² Case 15-E-0302: *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard*, Staff White Paper on Clean Energy Standard (January 25, 2016), p. 32 ("White Paper").

¹³ Case 15-E-0302: *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard*, CENG Initial Comments on White Paper (Filed April 22, 2016).

COMMENTS

I. Timely Approval of the Nuclear Tier Proposal Is Essential to Achieve the State’s Clean Energy Goals.

As Staff rightly emphasizes in the Responsive Proposal, the Nuclear Tier is essential to the State’s ability to achieve its clean energy goals. Formal retirement of these facilities is irreversible: nuclear facilities cannot be “mothballed” or otherwise suspend operations until a time when energy prices rebound. And if nuclear facilities retire, fossil-fueled units will likely take their place—and the nuclear facilities’ zero-emissions attributes will be lost. As the Responsive Proposal recognizes, “every baseload MWh of zero-emission power from these units that is lost would be replaced with power generated with significant levels of CO₂ and other unwanted air emissions from existing mothballed fossil-fueled units in the State or new gas-fired generation.”¹⁴ Thus, retaining the zero-emissions attributes associated with existing nuclear generation is integral to achieving Governor Andrew Cuomo’s clean energy goals for the State. Indeed, as Michael Shellenberger recently noted, “[n]early every time a nuclear plant has been closed, its energy production has been replaced almost entirely with fossil fuels.”¹⁵ California’s experience is illustrative. Shellenberger states that “[t]he share of power that California generated in-state from natural gas rose to 60 percent, from 45 percent, between 2011 and 2015, partly because of the closing of the San Onofre nuclear plant”—despite the significant support that California has provided to renewable generation.¹⁶

The consequences of nuclear plant closings for New York’s clean energy policy would be dire. As the Responsive Proposal notes, “[r]eplacement of the zero-emission attributes” of just the nuclear facilities located in upstate New York “with equivalent amounts of fossil-fueled attributes would result in an increase of approximately 31 million metric tons of CO₂ emitted into the

¹⁴ Responsive Proposal, at 1.

¹⁵ Michael Shellenberger, “How Not to Deal With Climate Change,” *New York Times*, June 30, 2016, <http://nyti.ms/29hbJpc>.

¹⁶ *Id.*

atmosphere over the next two years” alone.¹⁷ This is equivalent to a 50 percent increase in greenhouse emissions from the State’s power sector.¹⁸ The estimated social cost of these emissions is approximately \$1.4 billion over the next two years.¹⁹ In addition, nuclear facilities avoid the emission of other hazardous air pollutants such as nitrogen oxide, sulfur dioxide, mercury, particulate matter, and ozone.²⁰

Thus, nuclear power remains an essential bridge in moving the State’s economy from one based on fossil fuels to one based on renewable technology. Staff’s Responsive Proposal, which values the nuclear facilities’ environmental attributes based on the federal government’s social cost of carbon, and includes a consumer protection mechanism to reduce the ZEC price if energy prices are forecasted to rise, provides a sensible and equitable framework for compensating nuclear generators for their zero-emissions attributes. The total cost of the program over 12 years will be “a fraction of the benefit to be achieved”—even if one considers the carbon avoidance benefits alone.²¹ Altogether, the benefits exceed the costs by a 5 to 1 ratio.²²

Appropriately, an increasingly diverse group of stakeholders has expressed support for the Nuclear Tier. For example, a study performed by the Navigant Group for Consolidated Edison and National Grid finds that “earlier nuclear retirements will increase CO₂ emissions by 12 percent by 2023 and seven percent by 2030 when compared to a business as usual case.”²³ As the Joint Utilities explain, “[b]ecause nuclear units have such a high capacity factor, significantly more renewable energy resources would be required to replace them on an installed capacity basis....

¹⁷ Responsive Proposal, at 1.

¹⁸ Open Letter to Hon. Audrey Zibelman et al., July 14, 2016 (“Open Letter”), available at <http://www.environmentalprogress.org/new-york-public-service-commission-letter/>.

¹⁹ Responsive Proposal, at 1.

²⁰ *Id.*

²¹ *Id.* at 2.

²² *Id.*

These impacts could make the State’s [Clean Energy Standard] goals out of reach for New York’s consumers from a practical as well as a cost perspective.”²⁴

The New York Independent System Operator (“NYISO”) has expressed its support as well, stating that “[r]etaining all existing nuclear generators is critical to the State’s carbon emission reduction requirements...”²⁵ It has explained that a program compensating nuclear facilities for their environmental attributes as “a necessary bridge to retain existing, zero-emission nuclear generators until a market-based solution can be implemented.”²⁶ The Responsive Proposal is expressly designed to accommodate any such longer-term market-based solution. To the extent that any future NYISO reforms lead to the incorporation of the value of zero-emissions attributes into forecasted energy prices, the price for ZECs will be reduced accordingly to prevent double counting.²⁷

Thus, the NYISO stated, “[u]pon review of DPS Staff’s proposal, the NYISO believes the proposal generally addresses our concerns that nuclear resources be retained until longer term market solutions can be developed.”²⁸ The NYISO further stated that it “has reviewed and evaluated DPS Staff’s proposal pursuant to its market monitoring and mitigation obligations” and has “concluded, based upon current market conditions, that DPS Staff’s proposal does not raise

²³ Case 15-E-0302: *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard*, Comments of the Joint Utilities (Filed June 6, 2016), at 13.

²⁴ *Id.*

²⁵ Case 15-E-0302: *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard*, NYISO Supplemental Comments on the Clean Energy Standard (Filed July 8, 2016), at 12-13.

²⁶ *Id.* at 13.

²⁷ Responsive Proposal, at 6.

²⁸ Case 15-E-0302: *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard*, Comments of the New York Independent System Operator (Filed July 22, 2016), at 2.

wholesale market power concerns.”²⁹ Indeed, the NYISO concluded that “DPS Staff’s ZEC proposal appears to be a necessary solution to the State’s nuclear retention concerns.”³⁰

Prominent climate scientists and environmental policy experts have likewise highlighted the critical importance of the Nuclear Tier to New York’s clean energy goals. In an open letter to the Commission, a large group of prominent climate scientists and environmental policy experts, “moved by a growing scientific and environmental consensus that nuclear power must play a central role in fighting climate change,” urged the Responsive Proposal’s adoption.³¹ Likewise, former Environmental Protection Agency Administrator Carol Browner has encouraged New York to seize the “opportunity to cement its status as a clean energy leader” by “recogniz[ing] the important role of existing carbon-free nuclear power” and by “sending a signal to other states that existing nuclear deserves to be properly credited for its carbon-free energy.”³²

As the group of climate scientists and environmental policy experts explained, the Responsive Proposal offers “an efficient, economical way to preserve nuclear power.”³³ First, ZECs value the zero-emissions benefits of nuclear power based on the federal government’s estimates of the social cost of carbon. That is a fair and equitable standard for assigning an economic value to nuclear facilities’ environmental attributes. Second, the Responsive Proposal assures that the program will remain affordable. Staff’s Responsive Proposal caps the price of ZECs at the social cost of carbon, ensuring that consumers never pay more for the environmental attribute than it is worth. But if energy and capacity prices are forecasted to increase above \$39/MWh, the ZEC price will decrease, ensuring that the program remains affordable even if

²⁹ *Id.*

³⁰ *Id.*

³¹ Open Letter.

³² Nuclear Matters, “Nuclear Matters Urges Timely Implementation of the CES to Ensure Continued Operation of Upstate Nuclear Plants,” July 13, 2016, available at <http://www.nuclearmatters.com/blog/press-releases/nuclear-matters-urges-timely-implementation-of-the-ces-to-ensure-continued-operation-of-upstate-nuclear-plants>.

³³ Open Letter.

energy prices rise above today's historic lows. As the group of climate scientists and environmental policy experts noted, the cost of compensating nuclear facilities for their zero-emissions attributes "compare[s] favorably with renewable energy subsidies. Recent procurements by [NYSERDA] have given renewable projects state subsidies averaging \$22 per MWh for 20 years, on top of federal subsidies like the \$23 per MWh Production Tax Credit."³⁴

Because of historically low energy prices, this moment presents a unique opportunity to initiate this program. Current average wholesale electricity prices are lower than they have been in the last 15 years.³⁵ Thus, even if ZECs are priced at the initial \$17.48/MWh cap based on the social cost of carbon, the additional cost to retail electric customers would leave rates "lower than they have been for all but two of the last ten years."³⁶

II. CENG Supports the Responsive Proposal, Although It Exposes CENG to Significantly Greater Risk Than Other Constructs Considered in This Proceeding.

CENG supports the Responsive Proposal as a common-sense framework for compensating nuclear facilities for their zero-emissions attributes. In particular, CENG supports Staff's proposed pricing mechanism based on the federal government's social cost of carbon. Basing the ZEC price on the social cost of carbon is fitting because it is consistent with the program's environmental purpose and appropriately values the environmental attributes that nuclear facilities provide. At the same time, Staff's proposed pricing mechanism ensures that customers will pay no more for those environmental attributes than they are worth. The social cost of carbon was used as the relevant benchmark in the benefit cost analysis applied to, among other things, procurement of distributed

³⁴ Open Letter.

³⁵ NYISO, POWER TRENDS 2016: THE CHANGING ENERGY LANDSCAPE, at 3, available at, http://www.nyiso.com/public/webdocs/media_room/publications_presentations/Power_Trends/Power_Trends/2016-power-trends-FINAL-070516.pdf.

³⁶ Open Letter.

energy resources in the Commission’s Reforming the Energy Vision (“REV”) proceeding.³⁷ A host of stakeholders supported use of the social cost of carbon in that proceeding. Moreover, if anything, the social cost of carbon understates the value of nuclear facilities’ environmental attributes, since it does not account for the value of avoiding the emission of other hazardous air pollutants, such as nitrogen oxide, sulfur dioxide, mercury, particulate matter, and ozone. CENG also supports Staff’s proposal to adjust the ZEC price downward if forecasted energy and capacity prices increase, as this will ensure that the program will remain affordable for consumers even if energy prices rise above today’s historic lows.

Staff correctly finds that this proposed pricing mechanism “makes sense for the upstate ... facilities in the aggregate because it yields a result similar to the average pay-as-bid price for these facilities that would result from a competitively bid solicitation.”³⁸ The first-year ZEC price of \$17.48/MWh, when combined with Staff’s baseline forecast of \$39/MWh for Zone A wholesale energy and Rest-of-State capacity prices, is equal to approximately \$50/MWh in revenue for the upstate nuclear facilities likely to be eligible for the program (Ginna, Nine Mile Point, and Fitzpatrick), once one accounts for the significant plant-level energy price basis discounts these plants experience relative to the Zone A energy price.³⁹ That is comparable to the facility costs that CENG submitted to the Commission for the weighted average cost of Ginna and Nine Mile Point.⁴⁰ Under the proposed pricing mechanism, Fitzpatrick would also receive this same price despite the fact that single unit facilities, such as Fitzpatrick, have higher costs than dual unit facilities such as

³⁷ Case 14-E-0101: *Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision*, Order Establishing the Benefit Cost Analysis Framework (January 21, 2016).

³⁸ Responsive Proposal, at 5.

³⁹ The upstate nuclear facilities receive plant-level energy prices that are about \$6/MWh to \$7/MWh lower than the Zone A energy price that Staff has used for its baseline. Thus, the expected energy/capacity revenue for these facilities embedded in the Responsive Proposal is \$32 to \$33/MWh, rather than \$39/MWh, when this energy basis discount is incorporated.

⁴⁰ See Case 16-E-0270: *Petition of Constellation Energy Nuclear Group LLC; R.E. Ginna Nuclear Power Plant, LLC; and Nine Mile Point Nuclear Station, LLC to Initiate a Proceeding to Establish the Facility Costs for the R.E. Ginna and Nine Mile Point Nuclear Power Plants*, Petition (Filed May 9, 2016).

Nine Mile Point (and higher costs than the weighted average cost of Nine Mile Point and Ginna). Thus, the Commission can reasonably conclude that it is appropriate to pay a ZEC price based on the social cost of carbon, adjusted downward to protect consumers against future increases in forecasted energy and capacity prices.⁴¹

Although CENG supports Staff's proposed pricing mechanism, the Responsive Proposal does expose participating generators to significantly greater risk than other pricing constructs considered in this proceeding. First, under the Staff White Paper, ZEC prices would have been based in part on anticipated unit-specific generator costs. The Responsive Proposal links compensation directly to the social value of the environmental attributes that the ZECs reflect. Thus, it places the risk of unanticipated increases in costs on participating facilities.

Second, under the Staff White Paper, consumers and participating generators would have enjoyed reciprocal protection against changing market prices. ZEC prices would increase if forecasted market prices fell, and they would decrease if forecasted market prices rose. The Responsive Proposal eliminates that reciprocity: it protects consumers in the event forecasts predict rising prices, but gives participating generators no protection against falling market prices. Thus, in the event that market prices increase above a baseline of \$39/MWh, there will be a downward adjustment in the ZEC price, reducing it below the social cost of carbon.⁴² But the ZEC price can rise no higher than the social cost of carbon, even if forecasted market prices plummet.

⁴¹ Staff's comparison between the costs of eligible units and potential revenues is a prudent double check on the reasonableness of the proposal. However, because the program appropriately values ZECs based on a social cost of carbon, it does not provide eligible nuclear units with any certainty that it will recover its costs or risk or return. Indeed, as discussed above, because an eligible nuclear generator will bear the risk of not fully recovering its costs and the risk of further market price degradation, any argument that the ZEC value must be set based on a moment-in-time snapshot of costs versus revenues is misguided.

⁴² The \$39/MWh baseline is approximately equal to the sum of (1) the average of 2016 year-to-date Zone A energy forward prices for delivery over April 2017 through March 2019 as reported on the Intercontinental Exchange in \$/MWh and (2) the average of trailing month NYMEX Rest-of-State capacity forwards for delivery over April 2017 through March 2018, reported in \$/kW converted to \$/MWh by multiplying 1,000 kW per MW and then dividing by 8,760 hours per year.

The risks to which participating generators will be exposed—of rising costs that cannot be recovered through higher ZEC prices and of lower market revenues that cannot be offset through higher ZEC prices—are significant. Nevertheless, CENG supports the Responsive Proposal’s framework for ZEC pricing as providing the minimum revenue necessary to support the preservation of nuclear environmental attributes and as fair to consumers.

CONCLUSION

CENG appreciates Staff’s hard work in preparing the Responsive Proposal and the valuable input provided by the many active stakeholders in this proceeding. CENG supports the Responsive Proposal and looks forward to working with the Commission and other stakeholders to finalize and implement it in the very near future.

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Respectfully submitted,

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EXHIBIT A

Preliminary Comment on New York Department of Public Service “Staff’s Responsive Proposal for Preserving Zero-Emissions Attributes”

Summary:

- Electricity price effects must be considered when evaluating Staff’s proposed ZEC program. We found previously that electricity costs for New York consumers would average \$1.7 billion per year higher without the upstate nuclear plants. The electricity cost savings that come from preserving these nuclear plants exceed the cap on ZEC costs, which is \$482 million per year for the first two years. Thus Staff’s proposed program to preserve the upstate nuclear plants would actually save consumers money on power costs. The ZEC cost cap is below the estimated electricity cost savings that comes from preserving the upstate nuclear plants, and actual ZEC costs are expected to be below the cap in future years.
- In addition to the electricity cost savings for New York consumers, preserving the upstate nuclear plants would prevent the release of about 15 million tons of CO₂ per year into the atmosphere.

On July 8, 2016, the staff of the New York State Department of Public Service (Staff) released a document entitled “Staff’s Responsive Proposal for Preserving Zero Emissions Attributes” that proposes a methodology to set prices for Zero Emissions Credits, or ZECs, to preserve the zero-emissions attributes of the upstate New York nuclear plants, Fitzpatrick, Ginna, and Nine Mile Point. The Staff proposal effectively sets the ZEC price at the U.S. government estimate of the prevailing Social Cost of Carbon for the first two-year tranche, offset for the carbon value already captured via the prevailing carbon price in the Regional Greenhouse Gas Initiative (RGGI), and converted to a per-MWh rate.

Although the proposed ZEC program, viewed in isolation, appears to add to the price that consumers will pay for power, it is important to put this cost in the larger context of what the power price would be if the upstate nuclear plants were to shut down, as is likely absent the ZEC support. As discussed in our previous paper, absent the upstate nuclear plants, power prices would be significantly higher, because higher-cost resources would be called upon to make up the lost power production.¹ We estimated that

¹ *New York’s Upstate Nuclear Power Plants’ Contribution to the State Economy*, The Brattle Group, December 2015. Power prices are set by short-run variable cost, and nuclear plants have very low short-run variable cost compared to the alternative sources of power (mostly gas-fired) that would be needed to make up the lost power production. This is true even though the fixed costs of operating a nuclear plant are higher.

without the upstate nuclear plants, electricity costs would be higher by \$1.7 billion a year, averaged over the period 2015-2024. This would correspond to a rate increase of over one cent per kilowatt-hour – about a 7.2% increase averaged across all customer classes, or 5.8% for residential customers and 8.2% for commercial/industrial customers.² The cap on the cost of ZECs is well below this amount – \$482 million per year in the program’s first two years. The ZEC cap rises in later years but always remains below the electricity cost savings – in fact, the electricity price savings we estimated exceeds the ZEC cap by about \$1.0 billion per year on average. The actual cost of ZECs is likely to be lower, since power market prices are expected to increase, which will reduce ZEC prices below the cap.³

Thus, with the ZEC program to preserve the upstate nuclear plants, although customers would pay for ZECs, they would avoid a power price increase that is larger than the ZEC cost. This means that customers actually pay less overall for power than if the upstate nuclear plants were to shut down. Preserving the upstate nuclear plants will allow New York ratepayers to continue to benefit from recent reductions in wholesale electricity prices. According to the NYISO, wholesale prices in 2015 were the lowest in the 15-year history of New York’s competitive markets for wholesale electricity.⁴

Finally, the ZEC program would also prevent the release of about 15 million tons of CO₂ per year into the atmosphere, as well as reductions in other pollutants such as NO_x, SO₂, and particulates. The Staff proposal would thus reduce carbon and other emissions while simultaneously saving money for New York’s electricity consumers.

² To estimate the rate impacts by customer class, the \$1.7 billion in projected annual future costs that would accompany the loss of the upstate nuclear plants are allocated across customer classes according to rates and sales volumes for 2014, the most recent year available, as reported by the U.S. Energy Information Administration in EIA Form 826.

³ The Staff proposal updates the ZEC price to the estimated SCC for future periods (the SCC rises over time, and the proposal continues to adjust for the RGGI carbon value), but offsets the ZEC price for any improvements in future power market conditions relative to current conditions. Thus the Staff formula provides an upper bound on the magnitude of ZEC payments; ZEC prices would be lower than this bound to the extent the wholesale market value of power improves from its current low levels, and in fact power prices are generally expected to improve from their current lows.

⁴ New York ISO, “Power Trends 2016, The Changing Energy Landscape,” page 3.