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May 13, 2016

VIA ELECTRONIC MAIL

The Honorable Kathleen H. Burgess
Secretary
New York State Public Service Commission
Empire State Plaza, Agency Bldg. 3
Albany, NY 12223-1350

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

Dear Secretary Burgess:

Alliance for a Green Economy and Nuclear Information and Resource Service are nonprofit parties to the Clean Energy Standard case, intervening from a public interest, environmental, and consumer perspective. We hereby submit these reply comments in accordance with the April 29, 2016 "Notice Extending Reply Comment Period."

Respectfully submitted,

/s/
Jessica Azulay Chasnoff
Alliance for a Green Economy

/s/
Tim Judson
Nuclear Information and Resource Service

NEW YORK STATE
PUBLIC SERVICE COMMISSION

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

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REPLY COMMENTS BY ALLIANCE FOR A GREEN ECONOMY AND NUCLEAR INFORMATION AND RESOURCE SERVICE

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REPLY COMMENTS BY ALLIANCE FOR A GREEN ECONOMY
AND NUCLEAR INFORMATION AND RESOURCE SERVICE

Alliance for a Green Economy ("AGREE") and Nuclear Information and Resource Service ("NIRS") are nonprofit parties to the above-referenced Clean Energy Standard case, intervening from a public interest, environmental, and consumer perspective. We hereby submit these comments in accordance comments in accordance with the April 29, 2016 "Notice Extending Reply Comment Period."[1]

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[1] Found here: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={42AE24A9-5A37-4062-9473-DFFA8653B0C5}

I. Introduction

In our initial comments on the Clean Energy Standard, AGREE and NIRS expressed support for Governor Cuomo's directive that utilities be mandated to purchase renewable energy in order to meet New York's renewable energy and greenhouse gas emissions goals. We also laid out a case for why nuclear energy has no place in New York's suite of utility-supported or publicly-supported energy sources. We discussed the fact that nuclear energy is not clean and creates massive harm to the environment and health. We pointed out the lack of rational policy or technical basis for the nuclear tier as proposed by Staff. And we showed how New York can and must meet its greenhouse gas emissions goals without relying on nuclear power.

After reading comments submitted by dozens of other parties in this case, we hereby submit these reply comments, which further focus and clarify our positions on the proposed Clean Energy Standard in the context of the comments provided by other parties.

As an independent concern, we raise with the commission the broad issue of the legal basis for this proceeding, the apparent "mandate" from the governor to the commission to take certain actions, and the statutory basis for any commission action on a clean energy standard in view of these concerns.

II. Reply Comments on the Nuclear Tier

A. Nuclear is as controversial as it is dirty.

Well over 50 parties commented in this case, revealing the varied and wide interest in the prospect of a Clean Energy Standard that places binding mandates on utilities to purchase certain kinds of energy on behalf of their customers. The vast majority of parties support the concept of a Clean Energy Standard as a concrete vehicle for the state to achieve its renewable energy targets and greenhouse gas emissions reductions goals. When it comes to the nuclear tier, however, and the proposal that New York's electricity consumers should pay above-market rates to prevent the closure of certain nuclear reactors, there is nothing even close to a consensus or majority support.

Twenty organizations (including nonprofits and commercial entities) filed comments opposing the inclusion of nuclear subsides in the Clean Energy Standard.[2] The reasons for opposition varied from the fact that nuclear energy is not a clean or renewable energy source, to concerns over exorbitant costs, to concerns that the nuclear tier is not appropriate to include in a Clean Energy Standard, to issues with the uncompetitive nature of providing subsidies to one or two companies.

[2] In addition to AGREE and NIRS, opponents of the inclusion of nuclear subsidies within the Clean Energy Standard include the Green Education and Legal Fund, Direct Energy, Council on Intelligent Energy & Conservation Policy, Promoting Health and Sustainable Energy (PHASE), Environmental Defense Fund, NRG, Multiple Intervenors, National Energy Marketers, and the Clean Energy Organizations Collaborative, which filed jointly on behalf of Acadia Center, Citizens Campaign for the Environment, Citizens for Local Power, Environmental Advocates of New York, National Wildlife Federation, Natural Resources Defense Council, The Nature Conservancy, New York Public Interest Research Group, Pace Energy and Climate Center, Sierra Club

Another five parties,[3] while not opposing the inclusion of the nuclear subsidies in the Clean Energy Standard, expressed concern that the White Paper does not "describe how the State will transition away from nuclear energy subsidies, and when." They suggest the "Commission could articulate how Tier 3 will be phased out over time, in order to send a clear, long-term signal to the relevant nuclear facilities, the renewable energy industry, and other New York stakeholders and ratepayers."

Three parties submitted comments generally favorable to nuclear energy, but with concerns over the structure of the nuclear tier as proposed in the White Paper.[4]

Only eight parties that aren't nuclear owners support the nuclear tier outright[5], but even among those parties, there are concerns. For instance, New York City points out that many customers and load serving entities may opt to exceed the goals set in the Clean Energy Standard, and that those entities shouldn't be required to buy nuclear Zero Emission Credits ("ZECs"). New York City also argued that some customers have a philosophical opposition to nuclear power and those entities should not be obligated to prop up nuclear reactors when they can instead (and we would argue, better) contribute to the state's climate goals through the purchase of additional renewable energy.

To no one's surprise, the two nuclear owners operating reactors in New York – Entergy and Constellation Energy Nuclear Group ("CENG") – support the proposal for massive consumer subsidies to save their failing assets. But even between Entergy and CENG, there is complete and utter disagreement over how the subsidies should be structured, which reactors should be eligible, how the subsidies should be priced, and the legality of the entire program as proposed.

Many parties did not comment on the nuclear tier at all, so their position remains unknown. But among parties that did make their positions known, it is clear the nuclear tier does not enjoy widespread support and that implementation will be difficult, if not impossible. We encourage the Commission to focus on the only true bridge to renewable energy – which is to put into place policies that drive actual renewable energy development and demand reductions. The renewable energy tiers, which do enjoy the support of a vast majority of parties, will be complex enough to implement and should receive the full attention of the Commission.

B. What value do the ZECs represent? No one seems to know.

The White Paper proposes that consumers (through their utilities and ESCOs) subsidize nuclear reactors through the purchase of above-market ZECs. While Renewable Energy Credits are a product that has proven to have value to consumers of all kinds in New York and in other states, the "Nuclear Zero Emissions Credit" is a new product being proposed to be created and forced on consumers.

[3] Alliance for Clean Energy New York, American Wind Energy Association, Advanced Energy Economy Institute, Northeast Clean Energy Council, and Distributed Wind Energy Association

[4] Institute for Policy Integrity, IPPNY, and Nucor Steel Auburn fall into this category.

[5] Upstate Energy Jobs, New York State Business Council, NYISO, NYSEIA, City of New York, and the Indicated Joint Utilities, representing Consolidated Edison Company of New York, Inc., Niagara Mohawk Power Corporation, Orange and Rockland Utilities, Inc.

Yet, the White Paper never clearly defines exactly what value the ZEC is meant to capture. Parties commenting on the nuclear tier are equally confused. Across comments, there is no emerging consensus regarding value the ZECs are being developed to represent.

Is it avoided greenhouse gas emissions? If so, why isn't the cost of the ZEC based on the cost of carbon, instead of on the difference between market rates and nuclear operating costs? And wouldn't other environmental costs of nuclear, including their life-cycle greenhouse gas emissions, need to be netted against avoiding greenhouse gas emissions at the site of generation? Additionally, if greenhouse gas reductions are the focus, why are no other resources allowed to compete with nuclear operators for ZEC subsidies? Why create a wholly uncompetitive subsidy just for nuclear?

Is it economic development, jobs, or property taxes? If it is, don't other energy sources also provide such benefits (such as the 8,000 solar jobs in New York)? Why isn't this value being calculated for all energy sources? It is arbitrary to create a product based on perceived value of one type of energy source, but to do no evaluation of similar value provided by other market actors. As we noted in our initial comments, the economic development impacts of the green economy are already proving to be much larger than the employment benefits provided by nuclear reactors, with none of the radioactive side effects. (See our comparison of the public investments in green manufacturing compared with the potential nuclear subsidies.)[6] If the issue is local economic impacts related to the closure of specific facilities, the Commission must consider alternatives to mitigating those impacts, such as nuclear decommissioning, economic development, and the state's provisions for local government assistance.

Is it reliability? Though reliability is cited various times in Staff and Commission discussions of nuclear, and also cited as a reason to support nuclear reactors by some parties, there is now no doubt that Ginna and FitzPatrick are not needed to maintain reliability. The recently revised NYISO study on the FitzPatrick deactivation made this clear. Also, reliability is already valued in the market through other mechanisms such as capacity payments and the occasional Reliability Support Service Agreement or Reliability Must Run Contract.

So, we find ourselves asking… What do upstate nuclear reactors or reactors that are in financial destress provide in the form of additional value to consumers over reactors that are downstate or profitable? Or even over other kinds of energy resources? And why hasn't the Staff attempted to account for any of nuclear energy's obvious detriments in the calculation of the value of a ZEC?

If the proposal is to force consumers to buy a nuclear product, it is incumbent upon Staff and the Commission to define the exact product being sold and to clearly define its value. This calculation should be done transparently and be made available for public comment. Nothing approximating such a process has happened in this proceeding.

[6] The development of green industry, such as the Solar City factory in Buffalo, the 1366 Technologies factor near Rochester, and the Soraa LED lightbulb factory in Syracuse, NY collectively will create 6,420 long-term jobs. According to news reports, they will receive $937 million in state support. Compared to this, the economic development value of the nuclear tier, which could cost over $4 billion to preserve approximately 2,300 jobs for just a few more years, pales in comparison.

C. Nuclear energy is not a bridge, but a dangerous diversion.

In all the comments in favor of the nuclear tier, no party offered actual evidence to support the statement that has been repeated *ad nauseum* that New York cannot meet its greenhouse gas emissions goals if upstate nuclear reactors close. Simply stating how much energy nuclear power plants provide, or even pointing to past difficulties in building renewable energy at scale on a rapid time frame, does not prove that nuclear closures will "eviscerate" the state's progress toward its climate goals.

The Clean Energy Standard, in concert with the REV proceeding, the Clean Energy Fund, NY-Sun, and other policies, will rapidly transform New York's renewable energy prospects. These policies – along with New York's rapidly expanding renewable energy industry and an engaged public – are driving renewable energy investments and energy efficiency at a much faster pace than before. Therefore, past progress on renewable energy and efficiency is simply irrelevant. Assuming the Clean Energy Standard is effectively implemented, it will guarantee that New York meets its renewable energy goals, regardless of what happens to nuclear reactors.

Additionally, no party has yet explained how preventing the retirement of aging nuclear reactors in any way facilitates the development of renewable energy. There is every reason to believe the opposite -- that providing subsidies to nuclear generation would inhibit the development of renewable energy. There are at least three primary reasons this is the case:

- Distorting market price signals that would support deployment of renewables and efficiency.
- Raising the total cost of energy subsidies and making consumers averse to greater deployment of renewables.
- Maintaining a high level of inflexible baseload generation on the grid, and creating operational and cost barriers to development of renewables and energy efficiency.

In practical effect, subsidies intended to prop up uncompetitive nuclear reactors divert ratepayer dollars from investment in renewables and efficiency and erect market barriers to their development.

In our initial comments, we provided a detailed case and calculations showing how New York can meet and even exceed the 40% greenhouse gas reductions targets by 2030 even while shuttering *all six* nuclear reactors in the state.

Not only is it possible to do this, it's *essential* that New York plan for this possibility. Entergy has stated on the record, no less than three times since the release of the White Paper, that FitzPatrick is going to close, regardless of the offer to massively subsidize that unprofitable reactor.[7] Ginna and Nine Mile Point 1 – two of the world's oldest reactors – only have licenses to operate until 2029, so they, too, will

[7] See comments filed by Entergy Entities on the proposed expedited nuclear program on May 2, 2016: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={8F07D487-D77D-4922-9B18-B48BC98877F8}
See also "Initial Comments of Entergy Entities" filed April 22, 2016: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={AEDF63BF-E1FC-4091-A8D3-B85EA6F35179}
See also the transcript from the March 9 2016 technical conference on the nuclear tier: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={778C7ADC-31C4-4E94-95B9-FF6826046191}

be unhelpful in contributing to the 2030 goals. In fact, it would be folly for the state to spend money preventing their closure instead of putting the money to work on renewables and energy efficiency. Why should consumers pay for both aging reactors and new renewables and efficiency? So we have to ask, is this whole proceeding now just about preserving Nine Mile Point 2, a reactor that no one knows to be unprofitable at this time?

The only measure of environmental friendliness provided by commenters in support of nuclear power was the unsupported claim that if nuclear reactors close, they must be replaced entirely by natural gas. This assumption is ridiculous on its face. The recently revised New York Independent System Operator ("NYISO") study shows that no new generation facilities will be needed if Ginna and FitzPatrick close along with three coal plants in upstate New York and two gas plants in the New York City area.[8] These facilities are closing because they are no longer needed, so in effect, they have already been replaced. Any temporary increase in the capacity factors of existing gas facilities that result from all of these closures will immediately begin to ease as additional efficiency and renewable gains are made.

In addition, Staff and some parties have argued that nuclear reactor closures must be avoided to prevent "backsliding" on the state's emissions reductions. In our comments, we point out that the state has not established any policy on annual or incremental emissions targets, apart from the 2030 and 2050 goals, despite the strong demands of many parties in the most recent state energy planning process. There is no demonstrated policy basis for the nuclear tier insofar as interim emissions impacts are concerned. Neither the Staff nor any party proffering such an argument has presented any technical analysis demonstrating their case, either.

The argument that reactor closures will necessarily result in interim emissions increases is unfounded. As referenced above, we demonstrated in our comments that the state can, in fact, achieve both its 2030 renewable energy and emissions goals without nuclear generation. We attached to our comments a detailed analysis demonstrating our case. In the attached Appendix A to these reply comments, we augment that analysis by projecting year-to-year additions of energy efficiency and renewables. This analysis demonstrates that, not only can the state meet or exceed its 2030 renewables and emissions goals without nuclear generation, the retirement of reactors need not lead to significant or lasting increases in emissions.

In fact, deployment of renewables and efficiency could effectively displace all nuclear generation by the end of 2023; and year-over-year additions of renewables and efficiency could equal or exceed the electricity generated by nuclear reactors. Thus, there is no necessity case for preventing the closure of uncompetitive nuclear generation. The U.S. Environmental Protection Agency likewise reasoned in issuing the Clean Power Plan final rule that incremental deployments of low- or zero-carbon resources are feasible. What is more, while the Clean Power Plan will give no credit to states for "preserving" existing nuclear generation, new renewable generation is fully credited toward complying with the CPP's emissions targets, and energy efficiency may be counted toward compliance.

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[8] NYISO. Revised April 22, 2016. "Generator Deactivation Assessment - James A. FitzPatrick Nuclear Generating Facility" http://www.nyiso.com/public/webdocs/markets_operations/services/planning/Planning_Studies/Reliability_Planning_Studies/Generator_Deactivation_Assessments/FitzPatrick_Generator_Deactivation_Assessment_2016-04-22.pdf

What threatens New York's climate goals is not nuclear reactor retirements, but the possibility that New York will not aggressively enough pursue energy efficiency and renewable energy goals. Nuclear reactors are going to inevitably close. They are aging facilities, with license expirations on the horizon, limited lifespans, and rising operating costs. We can't get around this fact or wish it away. We must plan for it and make sure we are setting renewable energy and efficiency goals accordingly.

Even more of a threat to our climate is the possibility that New York will continue to drag its feet on support for renewable-ready space heating and transportation technologies. The lack of state financial support for heat pumps and the tepid support for electric vehicles is by far the greatest obstacle to reducing our greenhouse gas emissions 40% by 2030. As we noted in our previous comments, New York has already achieved significant gains in carbon-reductions in the electricity sector, but has much more work to do in the space heating and transportation sectors, which make up the vast majority of greenhouse gas emissions. To put things into perspective, the Ginna reactor accounts for 1.2% of New York's total energy generation, once transportation and direct fuel use in buildings is taken into account.

We also dispute the implication that nuclear energy is somehow beneficial because it as alternative to fossil fuels. Both nuclear and fossil fuels are polluting and risky, each in their own way. Both have the potential to irreparably destroy our environment and forever alter living conditions on Earth.

As our nuclear reactors age, our climate grows more erratic, and terrorism threats mount, the risks of catastrophic radiological pollution grow. Meanwhile, even without accidents, nuclear reactors continue to incrementally add long-lasting radioactive pollution to our environment, which accumulates in our water, air, and soil, just as fossil fuels incrementally add greenhouse gas pollution to the atmosphere. The challenge for humans is to create a transition strategy that will leave our climate as stable as possible and our planet as livable as possible. The eradication of fossil and uranium fuels both must happen for that to be achievable.

Numerous studies have shown this is possible, and even economically desirable. We simply need to get on with it.

D. Constellation Energy Nuclear Group's Comments

We take the most issue with comments submitted by CENG, whose majority owner is Exelon. Though it has filed no retirement notice for any of its reactors in Upstate New York, the company is pushing hard for immediate and large subsidies for all of its New York fleet. We note that Exelon was recently accused of misleading lawmakers in Illinois over the financial state of its nuclear reactors – telling legislators one thing and investors another.[9] We caution the Commission and all parties from believing Exelon's claims on their face, regarding which of its reactors are in fact losing money and which reactors it may or may not be intending to close.

In its comments, CENG suggests that ratepayers should be committed within 60 days of an order in this case to a full 12 years of subsidies for all of its reactors in New York. The Public Service Commission of Ohio ("PUCO") recently rejected such long-term contractual arrangements for preserving uncompetitive

[9] Crain's. April 30, 2016. "Exelon tells Wall St. one thing about profits while peddling a different tale in Springfield" http://www.chicagobusiness.com/article/20160430/ISSUE01/304309995/exelon-tells-two-different-stories-about-nuclear-plant-profits

nuclear and coal generation, reducing the proposed arrangements from 15 years to eight years; and FERC has since blocked the implementation of the reduced arrangements as it considers petitions challenging them. CENG also has the hubris to recommend that New York's consumers should cover not just the bare minimum of going forward operating costs, but also the company's cost of financial risk management, even though there is no upside to consumers to do so. Many of those risks derive from the possibility of unexpected outages, during which the nuclear plants could not claim to be providing any emission reduction benefits (which is presumably what the ZECs are valuing as best we can tell).

Further, CENG recommends that it should be able to receive ZEC payments for the megawatt hours produced by its entire portfolio in New York, even if not all reactors are losing money, or losing enough money to close.

We urge the Commission to reject all of these recommendations.

The nuclear subsidies proposed in the White Paper are not popular. Even less popular is the idea that New York should commit to uncompetitive nuclear subsidies for a long term, rather than a very short-term subsidy designed to phase out as renewable energy ramps up. There is no reason for New York to commit to a 12-year subsidy program for all of the nuclear reactors upstate. In proposing the idea, CENG discusses the upside of such a proposal for itself (which is obvious), but provides no evidence of benefits for consumers. The company is not offering to lock the subsidy at a low rate, or to pay back money if a reactor goes offline and the ZECs become worthless. All a long-term commitment would do is lock consumers into high payments for nuclear power when the trajectory is that nuclear reactors are getting more expensive while renewables and efficiency get cheaper.

We also dispute the idea that ratepayers should cover CENG's cost of risk as part of its operating costs. Again, what benefits accrue to consumers if they take on such risk payments? As Multiple Intervenors wrote in its comments: "customers increasingly are being placed in a 'heads-you-win, tails-I-lose' position."

Similarly, why should consumers subsidize nuclear reactors that are profitable and would otherwise stay open anyway? By suggesting the consumers should pay for CENG's entire nuclear portfolio in New York, regardless of whether all of the reactors are slated for closure otherwise, CENG seeks to maximize the economic benefits of the Clean Energy Standard. But consumers will lose.

III. Reply Comments on Other Aspects of the Clean Energy Standard

A. Baseload is declining in importance while flexibility is rising in necessity

We agree with Environmental Defense Fund and New York Battery and Energy Storage Technology Consortium ("NY-BEST") that New York must plan ahead for a system that can accommodate high penetrations of renewable energy. Both of those parties stressed the importance of planning for flexible compliments to intermittent renewable energy.

In this context, large baseload generators decline in importance and even become a liability if they are inflexible.[10] Nuclear reactors are the most inflexible and large resources on our system. They cannot safely or economically reduce their output to follow load. It is likely that as the portion of renewable energy increases in New York, nuclear reactors will increasingly be forced to pay negative prices for the right to continue to put their electricity on the system, which will just exacerbate their already terrible economics and put consumers on the hook for even higher subsidies. It will also cause renewable energy to be curtailed instead of used, which will hurt New York's renewable energy goals.

We support NY-BEST's proposal for a Flexibility Energy Credit ("FLEC") or other mechanism to support flexible companion resources that will enable high penetrations of variable renewable energy. Like NY-BEST, we urge that FLECs be provided to non-greenhouse-gas emitting assets that meet certain performance requirements.

B. Consumer choice should be preserved and proactivity should encouraged

One of the tenets underlying New York's REV process has been to encourage New York's consumers to get into the driver's seat and determine their own energy future. The idea is to facilitate consumer choice and consumer investment in distributed energy generation and demand management. It is reasonable to expect that all consumers will contribute to the state's greenhouse-gas emissions reductions (within their means[11]). But in order to be consistent with the consumer-centric goals of REV, it's important that the Clean Energy Standard not strip consumers of the choice for how they contribute. It's also important that consumers who go above and beyond not be penalized or used to offset the obligations of other entities.

We are hopeful that the Commission will not move forward with the Staff proposal to subsidize nuclear power reactors through the creation of ZECs. However, if the Commission does move forward with Tier 3, we agree with New York City's comments that no entity should be forced to buy ZECs. Those entities that are already purchasing or generating higher amounts of carbon-free energy than what is called for under the CES should not have to also contribute to the purchase of ZECs. Those individuals, large commercial entities, municipalities, or load serving entities that wish to buy additional RECs instead of buying ZECs should also be allowed to do so.

Nuclear power is so controversial that it is necessary to provide this alternative compliance mechanism so that people are not forced to subsidize the continued environmentally racist practice of uranium mining, the security-threatening production of irradiated nuclear fuel and plutonium, or the creation of radioactive waste that will saddle generations to come with irreparable environmental harm.

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[10] See this informative video by the Institute for Local Self Reliance: https://ilsr.org/coal-nuclear-baseload-compatible-renewable-future/
See also, this article about renewables curtailment due to lack of system flexibility in California: http://nawindpower.com/online/issues/NAW1412/FEAT_04_Renewable-Energy-Faces-Daytime-Curtailment-In-California.html

[11] In our previous comments we discussed the importance of ensuring energy affordability as an essential and missing piece of a comprehensive renewable energy policy in New York.

C. Only sustainable renewable energy should be eligible

Several parties commented on the eligibility criteria for Tiers 1 and 2. As a general rule, we support a fairly narrow definition of what kinds of resources should be eligible for public support through RECs.

For instance, biofuels whose production is not carbon neutral or that lead to deforestation or competition for farmland should not be included. Fuel cells that capture energy produced by fossil or nuclear fuels should not be included. Waste to energy facilities should not be included to the extent that they rely on the combustion of trash, which is not a renewable resource or clean for the environment. New large-scale hydro projects that threaten aquatic species, destroy wildlife habitat, displace or otherwise violate the territory rights of First Nations people should also not be included.

D. Additional tiers are likely needed

Many other parties made arguments for additional tiers or subtiers to ensure New York supports all of the necessary components of the renewable energy transition. We support an offshore wind tier as well as an energy efficiency tier or component of the Clean Energy Standard program. We do not see a path to meeting New York's renewable energy goals without these comprehensive elements of the policy.

We urge the Commission to put New York on par with other leading states by seeking 3% per year energy efficiency goals as recommended in the "Aiming Higher" study submitted into the docket by Pace Energy and Climate Center.

We were also compelled by New York City's arguments for a downstate tier or carve out to ensure geographic equity in the environmental and economic benefits of renewable energy. We encourage this idea to be explored further.

We further support comments by NY-GEO, which went into great detail about how the state can best support the transition to renewable-ready space heating and electric vehicles. As discussed above, without immediate and aggressive support for these technologies, New York will not be able to meet its greenhouse gas reductions. The importance of these sectors cannot be overstated.

E. Low and moderate income consumers should be supported by the Alternative Compliance Payments

In our initial comments we expressed concern about the cost burden of the Clean Energy Standard falling disproportionately on low income consumers. We cited data illustrating how regressive New York's electricity rates are today and how necessary it is for the Commission to address energy unaffordability as part of this proceeding. To that end, we support PosiGen's comments in general. We specifically urge the Commission to adopt PosiGen's recommendations that the Alternative Compliance Payments be specifically used to support low and moderate income energy efficiency and renewable energy programs. We see this as an elegant way to ensure that the alternative compliance fees paid by utilities would be used to further progress toward New York's greenhouse gas reduction goals, while also helping to ease energy burdens faced by New York's most vulnerable populations.

IV. Conclusion

We appreciate the opportunity to submit these reply comments, further clarifying our position in this case after reading initial comments by other parties. For all the reasons stated above, we urge the Commission to scrap the nuclear subsidies proposed within the Clean Energy Standard and to create a comprehensive program that will lead New York toward a 100% renewable energy system.

Respectfully submitted,

/s/
Jessica Azulay Chasnoff
Program Director
Alliance for a Green Economy

/s/
Tim Judson
Executive Director
Nuclear Information and Resource Service

Dated: May 13, 2016

Appendix A

Analysis of Renewable Energy Deployment and Nuclear Retirements

In comments filed with the New York Public Service Commission regarding the development of a large-scale renewable energy program, Alliance for a Green Economy (AGREE) and Nuclear Information and Resource Service (NIRS) provided a detailed analysis of how the state can feasibly achieve, or exceed, both its 2030 renewable energy and 2030 greenhouse gas emissions goals, without reliance on nuclear power. Through establishing achievable renewable energy and energy efficiency standards, New York could develop new zero-carbon energy resources by 2030, providing more than 90 million MWh (90 TWh). That is more than twice the total amount of electricity currently generated by nuclear power reactors in New York (~43 TWh).

Therefore, even in a bounding scenario in which all nuclear reactors in the state shut down before 2030, an additional ~47 TWh of new zero-carbon resources could be available to displace fossil fuel generation and/or electricity load increases from the electrification of transportation and heating. That is approximately as much as the total amounts of new renewables and efficiency-driven load reductions as the Department of Public Service Staff (Staff) project in the white paper proposal for the Clean Energy Standard. As a result, we project that, by 2030, New York could achieve 60%-68% renewable energy and 45%-48% reductions in greenhouse gas emissions (from 1990 levels), with no nuclear generation.

Thus, there is no need to provide subsidies to unprofitable nuclear power plants in order to meet New York's energy and emissions goals. Another argument proffered in support of nuclear subsidies is that reactors are such large generation sources, that their closure will inevitably result in large, sustained increases in greenhouse gas emissions. Since the state has declined to establish incremental or annual emissions targets, it is impossible to determine whether there is some interim impact to the closure of reactors that should be addressed.

Because the threat of catastrophic climate change is real and there is strong reason to avoid increases in emissions and to reduce greenhouse gas emissions as rapidly as possible – particularly to achieve the goal of limiting global average temperature increases to 1.5 degrees Celsius or less – we have conducted further analysis of our renewable energy and efficiency projections, breaking them down into year-by-year projections out to 2030. Our analysis makes clear that the closure of nuclear reactors can be achieved without sustained increases in greenhouse gas emissions. This is true even in a bounding scenario in which all nuclear reactors in New York close well before 2030 – a fact implied by the large amount of renewable energy and efficiency resources in excess of current nuclear generation in our projections. Yet our further analysis confirms that the combined deployment of a portfolio of efficiency and renewable resources is at scale with the amount of electricity produced by nuclear power plants, and that the potential closure of reactors, even in a state like New York with a relatively high level of nuclear generation, need not pose a threat to meeting aggressive emissions reduction goals.

Nuclear Generation

In its comments, Constellation Energy Nuclear Group provides an appendix with detailed historical data on nuclear generation. The data provides historical capacity factors for each

commercial power reactor in the United States from 2008-2014, including all six operating reactors in New York. The data is helpful in providing a baseline estimate of nuclear generation going forward.

The data also show a pronounced downward trend in reactor operations in recent years. For all but one reactor (Indian Point 3), capacity factors (CF) in the latest three to four years are lower than the seven-year average.[12] From 2012-2014, the statewide average capacity factor was 90.0% from 2012-2014, two points lower than the seven-year average (92.0% from 2008-14).

	Historical Capacity Factors							Average Capacity Factors		
Reactor	**2014**	**2013**	**2012**	**2011**	**2010**	**2009**	**2008**	**2008-14**	**2011-2014**	**2012-2014**
Ginna	91%	93%	90%	84%	97%	91%	109%	93.6%	89.5%	91.3%
Nine Mile Point 1	98%	88%	87%	84%	97%	92%	98%	92.0%	89.3%	91.0%
Nine Mile Point 2	87%	99%	83%	95%	89%	99%	90%	91.7%	91.0%	89.7%
FitzPatrick	79%	89%	84%	97%	85%	99%	89%	88.9%	87.3%	84.0%
Indian Point 2	93%	77%	90%	98%	82%	98%	91%	89.9%	89.5%	86.7%
Indian Point 3	98%	94%	100%	90%	99%	85%	107%	96.1%	95.5%	97.3%
TOTAL								92.0%	90.6%	90.0%
Upstate								91.4%	89.5%	88.8%
Downstate								93.0%	92.5%	92.0%

Applying the historical and average capacity factors to each reactor provides an estimate of the total electricity generated by each, and of total in-state nuclear generation. Assuming a 90% average capacity factor going forward, total electricity generation would be ~42.7 TWh per year, with individual reactors ranging from 4.6 TWh to 10.3 TWh.

Reactor	**Capacity (MW)**	**Generation @ CF = 2008-14 (MWh/yr.)**	**Generation @ CF = 2011-14**	**Generation @ CF = 2012-14**	**Generation @ CF = 90%**
Ginna	581	4,762,374	4,555,156	4,648,465	4,580,604
Nine Mile Point 1	621	5,004,763	4,855,164	4,950,364	4,895,964
Nine Mile Point 2	1,311	10,532,799	10,450,768	10,297,643	10,335,924
FitzPatrick	838	6,522,896	6,404,918	6,166,339	6,606,792
Indian Point 2	1,029	8,099,759	8,067,566	7,812,168	8,112,636
Indian Point 3	1,040	8,758,999	8,700,432	8,867,456	8,199,360
TOTAL	5,420	43,681,590	43,034,004	42,742,434	42,731,280
Upstate	3,351	26,822,832	26,266,006	26,062,810	26,419,284
Downstate	2,069	16,858,758	16,767,998	16,679,624	16,311,996

[12] It should also be noted that Indian Point 3's performance declined significantly from previous levels in 2015, with six unplanned outages following the reactor's scheduled refueling outage. In addition, 2016 is projected to be a very poor performance year for Indian Point 2, due to the extended maintenance outage to inspect and repair degraded reactor pressure vessel internal components, coming to at least four months of outage time.

Energy Efficiency

In our analysis, we propose establishing energy efficiency targets of 1.0%-1.5% higher than historical net electricity efficiency performance (0.634%). Using the lower efficiency standard, beginning in 2017 and projecting out to 2030, would yield over 2 million MWh in efficiency increases each year, and a total of over 34 TWh in net electricity load reductions by 2030.

Total energy efficiency amounts to 80% of current statewide nuclear generation, and 36% more than the total nuclear generation in Staff's proposal for Tier 3 nuclear subsidies in the Clean Energy Standard white paper. (The higher efficiency standard would result in 43 TWh in net reductions, more than all nuclear.)

Energy Efficiency at +1.0% (2015-2030)

Year	Load with Efficiency (MWh)	Incremental	Cumulative
2014	160,059,000		
2015	159,044,226	1,014,774	1,014,774
2016	158,035,886	1,008,340	2,023,114
2017	155,453,579	2,582,306	**4,605,421**
2018	152,913,468	2,540,111	7,145,532
2019	150,414,862	2,498,606	**9,644,138**
2020	147,957,083	2,457,779	12,101,917
2021	145,539,464	2,417,619	14,519,536
2022	143,161,349	2,378,115	**16,897,651**
2023	140,822,093	2,339,256	19,236,907
2024	138,521,060	2,301,033	21,537,940
2025	136,257,626	2,263,434	23,801,374
2026	134,031,176	2,226,450	**26,027,824**
2027	131,841,107	2,190,069	28,217,893
2028	129,686,823	2,154,284	30,372,177
2029	127,567,740	2,119,083	32,491,260
2030	125,483,283	2,084,457	34,575,717

Wind – On-Shore

We project 6,800 MW of new onshore wind generation capacity by 2030, beginning with 200 MW per year from 2017-2020, and ramping up to 600 MW per year from 2021-2030. At an average annual capacity factor of 35%, that would yield year-by-year increases of 613 gigawatt-hours (GWh) per year of new onshore wind generation in the early years, and 1.8 TWh per year in the later years, totaling nearly 21 TWh of new onshore wind generation by 2030.

1.8 TWh is equivalent to 27%-39% of the annual generation of uneconomical reactors in New York. Since most onshore wind potential in New York is in the upstate region, much of this resource would serve the same parts of the state in which most nuclear reactors are located.

The total amount of new wind generation in 2030 would be equivalent to 84% of the nuclear generation in Staff's proposal for Tier 3 nuclear subsidies, and more than the annual generation of the three upstate nuclear reactors most likely to be closed by 2030 (FitzPatrick, Ginna, and Nine Mile Point 1).

Wind – On-Shore (2015-2030)

Year	Capacity (MW)	Generation (MWh)
2015		
2016		
2017	200	613,200
2018	400	1,226,400
2019	600	1,839,600
2020	800	2,452,800
2021	1,400	4,292,400
2022	2,000	6,132,000
2023	2,600	7,971,600
2024	3,200	9,811,200
2025	3,800	11,650,800
2026	4,400	13.490.400
2027	5,000	15,330,000
2028	5,600	17,169,600
2029	6,200	19,009,200
2030	6,800	20,848,800

Wind - Offshore

We project 5,000 MW of new offshore wind generation capacity by 2030, beginning with 1,700 MW of projects already in the planning process, and 3,300 MW of additional capacity by 2030. At an average annual capacity factor of 45%, that would yield year-by-year increases of 400-2,000 GWh per year of new offshore wind generation in the early years, and 1,600 GWh per year in the later years, totaling 20 TWh of new offshore wind generation by 2030.

1,600-2,000 TWh is equivalent to 20%-25% of the annual generation of each of the reactors at Indian Point. Since most offshore wind potential in New York is in the downstate region, much of this resource would serve the same region in which Indian Point is located.

Wind – Offshore (2015-2030)

Year	Capacity (MW)	Generation (MWh)
2015-6		
2017		
2018	100	394,200
2019	300	1,182,600
2020	700	2,759,400
2021	1,200	4,730,400
2022	1,700	6,701,400
2023	2,112.5	8,327,475
2024	2,525	9,953,550
2025	2,937.5	11,579,625
2026	3,350	13,205,700
2027	3,762.5	14,831,775
2028	4,175	16,457,850
2029	4,587.5	18,083,925
2030	5,000	19,710,000

Under our projections, within ten years (2018-2028), new offshore wind could be generating as much electricity as Indian Point does presently. The total amount of new offshore wind generation in 2030 would be more than 120% of the annual generation output of Indian Point.

Solar PV - Utility-Scale

We project 5,000 MW of new utility-scale solar PV capacity by 2030, beginning with 100 MW in 2017, and ramping up to 400 MW per year by 2020. At an average annual capacity factor of 14%, that would yield year-by-year increases of 120-370 GWh per year in the early years, and ~500 GWh per year thereafter, totaling over 6 TWh of new utility-scale solar PV by 2030.

500 GWh is equivalent to 8-11% of the annual generation of uneconomical reactors in New York. There is more available land for utility-scale solar development in the upstate region, so a significant portion is likely to serve the same region in which most nuclear reactors in New York are located.

The total amount of utility-scale solar generation in 2030 would be 25%-33% greater than the output of the smallest reactors in the state (Ginna and Nine Mile Point 1), and more than 90% of FitzPatrick's annual generation.

Solar PV – Utility-Scale (2015-2030)

Year	Capacity (MW)	Generation (MWh)
2015		
2016		
2017	100	122,640
2018	300	367,920
2019	600	735,840
2020	1,000	1,226,400
2021	1,400	1,716,960
2022	1,800	2,207,520
2023	2,200	2,698,080
2024	2,600	3,188,640
2025	3,000	3,679,200
2026	3,400	4.169.760
2027	3,800	4,660,320
2028	4,200	5,150,880
2029	4,600	5,641,440
2030	5,000	6,132,000

Solar PV - Distributed

We project 8,000 MW of new distributed solar PV capacity by 2030, developed at a rate of 500 MW per year. At an average annual capacity factor of 13%, that would yield increases of 570 GWh per year of new generation each year.

570 TWh is equivalent to 5%-13% of the annual generation of reactors in New York. Under our 2030 projections, distributed solar PV could generate more electricity than the output of Ginna and Nine Mile Point 1 combined, both of which are scheduled to retire in 2029, at the latest.

Alternatively, it would be nearly 140% of FitzPatrick's output; 110% of either of the Indian Point reactors; or 90% of generation from Nine Mile Point 2.

Solar PV –Distributed (2015-2030)

Year	Capacity (MW)	Generation (MWh)
2015	500	569,400
2016	1,000	1,138,800
2017	1,500	1,708,200
2018	2,000	2,277,600
2019	2,500	2,847,000
2020	3,000	3,416,400
2021	3,500	3,985,800
2022	4,000	4,555,200
2023	4,500	5,124,600
2024	5,000	5,694,000
2025	5,500	6,263,400
2026	6.000	6.832.800
2027	6,500	7,402,200
2028	7,000	7,971,600
2029	7,500	8,541,000
2030	8,000	9,110,400

Incremental and Cumulative Energy Efficiency and Renewable vs. Nuclear Generation

Each of these renewable energy and efficiency resources can and will make major individual contributions to New York's energy supply and greenhouse gas reductions over the long run. Taken together as a portfolio, they also amount to large increases in zero-carbon energy on a year-to-year basis: adding the equivalent of a large power plant's worth of zero-emissions energy to the grid each year. This would not only enable a rapid decarbonization of the electricity sector; it would support the simultaneous decarbonization of the transportation, heating and other sectors. It would also make it possible for uneconomical, uncompetitive and/or unlicensed nuclear reactors to close, while exceeding the state's emissions reduction goals.

The cumulative amount of new energy efficiency and renewables would equal the output of one of the state's existing nuclear reactors every one to two years, depending on each reactor's generation capacity:

- By the end of 2017, new renewables and efficiency added since 2014 could equal 7 million MWh per year – more than the annual generation capacity of the FitzPatrick reactor, which is slated to close in January 2017.
- By the end of 2018, new renewables and efficiency could add another 4.4 million MWh/year, totaling 11.4 TWh/year – more energy than FitzPatrick and Ginna combined.
- By the end of 2019, new renewables and efficiency could supply an additional 4.8 million MWh/year, as much energy as Nine Mile Point 1 generates.
- In mid-2021, new renewables and efficiency could supply ~26 TWh – as much energy as all four of the upstate nuclear reactors combined (including Nine Mile Point 2).

- By the end of 2023, the mid-point of the Clean Energy Standard program, new renewables and efficiency could supply over 43 TWh/year – more energy than all nuclear reactors in New York currently generate.
- By 2030, an additional 47 TWh of efficiency and renewables could be deployed, equivalent to two-thirds of total fossil fuel generation in 2014.

Thus, renewables and efficiency can "replace" nuclear and fossil fuel generation in the same time frame, both frontloading large, near-term reductions in greenhouse gas emissions by 2030, and preparing the way for deep decarbonization beyond 2030.

Cumulative Annual Energy Efficiency and Renewable Energy Additions (2015-2030)

Year	Energy Efficiency		Wind - Onshore		Wind - Offshore		Solar PV - Utility		Solar PV – Distributed		Total New EE + RE	
	Incremental	Cumulative	Capacity	Generation	Capacity	Generation	Capacity	Generation	Capacity	Generation	Cumulative	Incremental
2014												
2015	1,014,774	1,014,774							500	569,400	1,584,174	1,584,174
2016	1,008,340	2,023,114							1,000	1,138,800	3,161,914	1,577,740
2017	2,582,306	4,605,421	200	613,200			100	122,640	1,500	1,708,200	**7,049,461**	3,887,546
2018	2,540,111	7,145,532	400	1,226,400	100	394,200	300	367,920	2,000	2,277,600	**11,411,652**	4,362,191
2019	2,498,606	9,644,138	600	1,839,600	300	1,182,600	600	735,840	2,500	2,847,000	**16,249,178**	4,837,526
2020	2,457,779	12,101,917	800	2,452,800	700	2,759,400	1,000	1,226,400	3,000	3,416,400	21,956,917	5,707,739
2021	2,417,619	14,519,536	1,400	4,292,400	1,200	4,730,400	1,400	1,716,960	3,500	3,985,800	**29,245,096**	7,288,179
2022	2,378,115	16,897,651	2,000	6,132,000	1,700	6,701,400	1,800	2,207,520	4,000	4,555,200	36,493,771	7,248,675
2023	2,339,256	19,236,907	2,600	7,971,600	2,112.5	8,327,475	2,200	2,698,080	4,500	5,124,600	**43,358,662**	6,864,891
2024	2,301,033	21,537,940	3,200	9,811,200	2,525	9,953,550	2,600	3,188,640	5,000	5,694,000	50,185,330	6,826,668
2025	2,263,434	23,801,374	3,800	11,650,800	2,937.5	11,579,625	3,000	3,679,200	5,500	6,263,400	56,974,399	6,789,069
2026	2,226,450	26,027,824	4,400	13,490,400	3,350	13,205,700	3,400	4,169,760	6,000	6,832,800	63,726,484	6,752,085
2027	2,190,069	28,217,893	5,000	15,330,000	3,762.5	14,831,775	3,800	4,660,320	6,500	7,402,200	70,442,188	6,715,704
2028	2,154,284	30,372,177	5,600	17,169,600	4,175	16,457,850	4,200	5,150,880	7,000	7,971,600	77,122,107	6,679,919
2029	2,119,083	32,491,260	6,200	19,009,200	4,587.5	18,083,925	4,600	5,641,440	7,500	8,541,000	83,766,825	6,644,718
2030	2,084,457	34,575,717	6,800	20,848,800	5,000	19,710,000	5,000	6,132,000	8,000	9,110,400	90,376,917	6,610,092

This also means that, through deployment of renewable energy and efficiency, there would be no net increase in emissions from the electricity sector due to reactor closures, even in a bounding scenario in which all reactors in New York closed by 2023. There is no indication that all six reactors in New York will close that soon. But the advanced age and rising costs of reactors make the retirement of reactors prior to their license expiration dates more likely.

It is therefore advisable to plan for reactor closures as a contingency in establishing renewable energy, efficiency, and emissions reduction programs like the Clean Energy Standard (CES). At least two reactor closures are anticipated imminently, at the outset of the CES: FitzPatrick and Ginna, both projected to retire in early 2017. Our analysis shows that, with a diverse portfolio of incremental renewable energy and efficiency additions, there would be no need for increased fossil fuel generation and greenhouse gas emissions as a result of the reactors' closures.

This demonstrates one of the EPA's rationales in deciding to exclude existing nuclear and renewable generation from the Clean Power Plan: that incremental additions of other zero-carbon resources can ensure that the closures of nuclear reactors do not result in increased greenhouse gas emissions, nor derail state's efforts to meet emissions reduction targets.

> With respect to existing nuclear units, … we believe that it is inappropriate to base the BSER in part on the premise that the preservation of existing low- or zero-carbon generation, as opposed to the production of incremental, low- or zero-carbon generation, could reduce CO2 emissions from current levels. Accordingly, we have determined not to reflect either of the nuclear elements [existing or under-construction reactors] in the final BSER.[13]

Our analysis does not mean that all reactors will close immediately. Rather, it indicates that a portfolio of strong, enforceable renewable energy and efficiency programs would ensure New York State meets, and even exceeds, the goals of the CES and the state energy plan, regardless of the fate of nuclear generation, and without necessitating subsidies to uneconomical reactors.

2030 New York State Electricity Sources and Renewable Energy Standard

Energy Source – incl. imports	2014 Generation (TWh)	2030 Generation (TWh) – transport and heat scenarios			2030 Share			Change		
Fossil Fuels	73	45	51	64	**32%**	34%	**40%**	-38%	-30%	-12%
Nuclear	46	0	0	0	**0%**	0%	**0%**	-100%	-100%	-100%
Renewables	42	97	97	97	**68%**	66%	**60%**	230%	230%	230%
Total	**161**	**142**	**148**	**161**						

2030 Statewide Greenhouse Gas Emissions, All Sources

Sector	1990 Emissions (MMt CO2e)	2011 Emissions (MMt CO2e)	2030 Emissions Low Load	2030 Emissions High Load
Transportation	60.74	71.78	37.88	19.94
Residential	34.17	31.37	17.25	17.25
Commercial	26.51	24.27	13.35	13.35
Industrial	20.01	11.54	11.54	11.54
Energy Production	64.62	42.50	26.20	37.26
Other Sources	24.71	30.28	21.20	21.20
TOTAL	**230.76**	**211.74**	**127.42**	**120.54**
Reduction from 1990		8.2%	**44.8%**	**47.8%**

[13] U.S. Environmental Protection Agency. Clean Power Plan Final Rule. Federal Register, Vol. 80, No. 205. Friday, October 23, 2015. Pages 64736-7. https://www.gpo.gov/fdsys/pkg/FR-2015-10-23/pdf/2015-22842.pdf