Appendix A: Eligibility of Resources

RES Eligible Electric Generation Sources	**Source**	**Other Requirements**
Biogas	Landfill Gas (Methane) Reciprocating/Internal Combustion Engine	Only the electricity generated from eligible fuel is eligible.
	Sewage Gas (Methane) Reciprocating/Internal Combustion Engine	
	Manure Digestion (Methane) Reciprocating/Internal Combustion Engine	If required to have a SPDES permit by NYSDEC regulations, a Concentrated Animal Feeding Operation (CAFO) providing the manure must have and be in compliance with its current Agricultural Waste Management Plan (AWMP) developed by a duly qualified Agricultural Environmental Management (AEM) Planner and must be operating in compliance with any applicable SPDES permit. If not required to have a SPDES permit, the CAFO must be operating in compliance with the best management practices for a facility of its size set forth in the Principles and Water Quality Protection Standards specified in the Agricultural Environmental Management (AEM) Framework & Resource Guide developed by the NYS Department of Agriculture and Markets and the NYS Soil and Water Conservation Committee.
	Anaerobic Digestion (other biogas digestion using agricultural or food processing residues and by-products)	
	Biomass* Thermochemical Gasification (syngas)	

RES Eligible Electric Generation Sources	**Source**	**Other Requirements**
Biogas (cont.)	Biogas (from eligible sources of biomass* feedstock) Combined Heat & Power	
	Biogas (from eligible sources of biomass* feedstock) Co-fired with existing fossil-fuel Combustion	Only the electricity generated from the eligible biomass portion of the fuel is eligible.
Biomass *	Biomass Direct Combustion	
	Biomass Combined Heat & Power	
	Biomass Co-fired with existing fossil-fuel Combustion	Only the electricity generated from the biomass portion of the fuel is eligible.
Liquid Biofuel	Biomass* Liquefaction through acid or enzymatic hydrolysis (Ethanol)	
	Biomass* Esterification (Biodiesel, Methanol)	
	Biomass* Thermochemical Pyrolysis (Bio-oil)	
	Biomass* Hydrothermal Liquefaction	
	Liquid Biofuel (from eligible sources of biomass* feedstock) Combined Heat & Power	
	Liquid Biofuel (from eligible sources of biomass* feedstock) Co-fired with existing fossil-fuel Combustion	Only the electricity generated from the biomass portion of the fuel is eligible.

RES Eligible Electric Generation Sources	**Source**	**Other Requirements**
Fuel Cells	Solid Oxide Fuel Cells (SOFC)	
	Molten Carbonate Fuel Cells (MCFC)	
	Proton Exchange Membrane Cells (PEM)	
	Phosphoric Acid Fuel Cells (PAFC)	
Hydroelectric	Hydroelectric Upgrades	No new storage impoundment, eligibility limited to the incremental production associated with the upgrade.
	Low-Impact Run-of-River Hydroelectric	No new storage impoundment.
Solar	Photovoltaics	
Tidal/Ocean	Tidal (Turbines and other rotary motion drives) electrical generators	
	Ocean Wave (Turbines and other rotary motion drives)	
	Ocean Current(Turbines and other rotary motion drives) Wave (Turbines and other rotary motion drives)	
	Ocean Thermal Pumped Storage Hydro Powered by Tidal	
Wind	Wind Turbines	

***Eligible Sources of Biomass**[1]

Agricultural Residue

Woody or herbaceous matter remaining after the harvesting of crops or the thinning or pruning of orchard trees on agricultural lands. Agricultural by-products such as leather and offal and food processing residues that are converted into a biogas or liquid biofuel.

Harvested Wood

Wood harvested during commercial harvesting.

Previous Commission Orders state that biomass facility owners must have and be in compliance with an approved forest management plan (FMP) to make use of biomass that fits under the definitions of "Harvested Wood" and/or "Silvicultural Waste Wood." The FMP should address the overall management goals and performance standards that need to be used during the procurement of the biomass resource for the facility. The FMP is required to include: standards and guidelines for sustainable forest management and requires the adherence to management practices that conserve biological diversity, productive forest capacity, and promote forest ecosystem health. The FMP must be completed by a qualified forester and approved by the Department of Public Service.

A copy of the approved FMP needs to be provided to each of the biomass suppliers for the biomass facility. Suppliers need to be in compliance with the FMP for the facility. Landowners supplying feedstocks to the suppliers are not required to have their own forest management plan. However, suppliers are required to prepare harvest plans for each parcel where harvested biomass is supplied to an RPS program eligible generator. This requirement should be clearly stated in the FMP. It should be further stated that harvest plan content and adherence to the harvest plan remains the responsibility of the participating biomass facility.

Silvicultural Waste Wood

Wood harvested during timber stand improvement and other forest management activities conducted to improve the health and productivity of the forest. The requirements for approved Forest Management Plans and Harvest Plans are the same as for "Harvested Wood" stated above.

Mill Residue Wood

Hogged bark, trim slabs, planer shavings, sawdust, sander dust and pulverized scraps from sawmills, millworks and secondary wood products industries.

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[1] Details on certain requirements are more fully documented in the NYSERDA Publication: Biomass Power Guide, Revised July 22, 2014 available on the NYSERDA Website http://www.nyserda.ny.gov/Cleantech-and-Innovation/Biomass.

Pallet Waste

Unadulterated wood collected from portable platforms used for storing or moving cargo or freight.

Site Conversion Waste Wood

Wood harvested when forestland is cleared for the development of buildings, roads or other improvements.

Sustainable Yield Wood (woody or herbaceous)

Woody or herbaceous crops grown specifically for the purpose of being consumed as an energy feedstock (energy crops).

Urban Wood Waste and Refuse Derived Fuel

Two types of refuse derived fuels qualify as eligible fuels:

1. The source-separated, combustible, untreated and unadulterated wood portion of municipal solid waste or construction and demolition debris, including biomass prepared by a densification process resulting in a uniformly sized, easy to handle fuel pellet or briquette.

2. Clean wood recovered from a Construction and Demolition (C&D) debris at a permitted Material Reclamation Facility (MRF) or C&D processing facility. This type of eligible fuel is subject to additional quality control safeguards and testing:

    - Solid waste management facility authorization from NYSDEC for the construction and operation of the MRF or C&D processing facility

    - Beneficial Use Determination (BUD) for the wood fuel product

    - QA/QC procedures for procuring, inspecting, sampling and testing Clean MRF Fuel as noted in the Biomass Power Guide

Adulterated Biomass

Adulterated biomass includes:

- all types of biomass that do not fall within the categories of eligible unadulterated biomass, such as paper, paperboard boxes, textiles, yard waste and leaves, non-recyclable wood (e.g. plywood and particle board);

- agricultural by-products such as leather and offal and food processing residues;

- other adulterated wood wastes and mixed adulterated and clean wood wastes

For biomass recovered from municipal mixed-waste streams or other adulterated biomass a primary conversion step to liquid or gaseous fuels is required. Power generation facilities that choose to use these types of biomass must demonstrate that emissions from electric energy production from the use of the adulterated feedstocks is equal to or less than the emissions for the process using unadulterated biomass feedstocks. This is only possible if the primary conversion step produces a clean gaseous or liquid fuel for the power conversion system as described in the Biomass Power Guide.[2]

Co-firing eligible and ineligible resources

Projects that plan to co-fire unadulterated biomass with fossil fuels or other ineligible fuels have additional measurement and reporting requirements to ensure that only the electricity generated from eligible biomass is counted in the CES program. This requires separate feed and measurement systems for each fuel stream plus regular sampling and analysis of fuels to ensure that the reported eligible generation is based on an accurate measurement of heat input for each fuel stream to the boiler or other conversion system.

[2] http://www.nyserda.ny.gov/-/media/Files/EDPPP/Energy-and-Environmental-Markets/RPS/RPS-Documents/NYS-RPS-biomass-guidebook.pdf

ADDITIONAL ELIGIBILITY REQUIREMENTS

1. Retail Sale Requirement

For electricity to be eligible for Tier 1 RECs, it must be demonstrated to the satisfaction of the Commission or its designee that the electrical output of the eligible generation facility commencing operation after January 1, 2015, either originated in New York State or was contractually delivered into New York State, and was sold to consumers in New York State in a retail sale.

2. Locational/Delivery Requirement

For electricity to be eligible, it must be demonstrated to the satisfaction of the Commission or its designee that the electrical output of the generation facility was 1) scheduled into a market administered by the New York Independent System Operator, Inc. (NYISO) for end-use in New York State; or 2) delivered through a wholesale meter under the control of a utility, public authority or municipal electric company such that it can be measured, and such that consumption within New York State can be tracked and verified by such entity or by the NYISO; or 3) delivered through a facility dedicated generation meter, which shall be approved by and subject to independent verification by the DPS or its designee, to a customer in New York State whose electricity was obtained through the NYISO/utility system. For any facility seeking to satisfy the electricity delivery requirement through options 2 or 3 above, all costs associated with measurement, tracking, and verification, to the satisfaction of DPS Staff or its designee, and for participation in NYGATS must and will be borne by the facility owner/developer.

Out-of-state intermittent renewable generators that participate in Tier 1 solicitations may sell and transmit energy as it is generated into the spot market of the control area of its location without simultaneous transmission into the New York Control Area, so long as an equal quantity of energy is transmitted out of the affected spot market into the New York Control Area for end-use during the same hour as the renewable generation is produced (hourly matching). Contractual deliveries associated with the out-of-state resource shall be recognized in each hour as the lesser of actual hourly metered energy production by the renewable generator or actual hourly energy delivered to the electric energy purchaser in the New York Control Area for end-use. In addition, if the control area of origin has an attributes accounting and tracking system or an environmental disclosure program, it is required that such system and/or program recognize hourly matched transactions without double counting the attributes in any jurisdiction.

3. Bilateral Sales

Bilateral sales for electricity associated with the electricity produced by an eligible facility are permissible provided that the seller of electricity from an eligible facility can demonstrate that the purchaser of the electricity is a NYS Load Serving Entity (LSE), or one or more NYS end-users.

4. Net Metering

Eligible generation resources at sites within new York State commencing operation after January 1, 2015 that are "behind-the-meter" generation resources qualify for Tier 1 procurements and the electricity they produce may be consumed by customers behind-the-meter, subject to the measurement, verification and tracking provisions set forth in section 2 numeral 3) noted above. Projects that use a net-metering regime are eligible for both Tier 1 and net metering opportunities until such time that the Commission may change that dual eligibility requirement in a subsequent order.

Comment Summaries

This summary of comments is compiled for the benefit of the reader and is not intended to be a comprehensive source of all comments submitted in this proceeding or to reflect any weight given particular comments by the Public Service Commission (Commission) or the Staff of the Department of Public Service (Staff). In addition to the comments summarized individually below thousands more comments have been submitted and considered by Staff and the Commission.

Over 3,600 individual public comments were submitted electronically on the New York State Department of Public Service (DPS) Document and Matter Management System (DMM), and/or they were e-mailed to the DPS Secretary, under Case No. 15-E-0302, during the public comment period for the Clean Energy Standard Proposal White Paper and the Cost Study. A majority of the commenters support the Clean Energy Standard White Paper and the Cost Study, and they believe in the creation of enforceable renewable energy resources. Many comments argue for long range clean energy environmental goals of 100 percent in the State of New York.

Approximately 1,600 of the 3,600 individual comments that were filed on DMM believe the Commission should reject subsidizing nuclear plants (Exelon Corporation) because in the view of the commenters, nuclear power is not clean, not zero emissions, not carbon-free, and not safe. Also, several hundred comment included concerns regarding the process employed to evaluate the Clean Energy Standard proposal, stating that the comment period for the Zero Emissions Attributes should be extended. Many comments expressed a belief that New York should proactively plan to phase out nuclear energy and fossil fuels, instead of charging New Yorkers billions of dollars to prop up aging nuclear plants.

Some comments state that mandating nuclear subsidies will harm low-income customers and upstate businesses. Many commenters suggest the state should focus energy efficiency and renewable energy are cleaner, safer, and more affordable than nuclear power. A majority of the opposition to nuclear power supports the development of New York’s world class offshore wind resources, and the creation of an off shore wind tier within the Clean Energy Standard.

Approximately 2,000 of the 3,600 individual public comments fully support the Clean Energy Standard proposal, and the inclusion of nuclear power in the Clean Energy Standard. Many

supporters of the nuclear program also support enforceable energy efficiency targets as affordable and environmentally beneficial. They also state that New York's nuclear power plants should not close prematurely because it would be an enormous setback to the State's clean energy goals, in reducing greenhouse gas emissions and mitigating climate change.

According to individual commenters who support the nuclear option, nuclear power supports economic growth and prosperity, provides jobs for highly skilled workforce, enhances the nation's energy security and local grid reliability, and protects the planet for future generations. Supporters suggest that nuclear power needs to play a prominent role in the State's energy portfolio to sustainably phase out fossil fuels and maintain economic stability in local communities. They state that New York can lead the way and be a role model for other states to reduce carbon emissions, and provide New Yorkers clean reliable electricity for decades to come.

In addition to the several thousand public comments submitted during the public comment period for the Clean Energy Standard, the Sierra Club delivered for submission 11,000 public comments, stating that the Clean Energy Standard should be enforced through "Alternative Compliance Payments" (ACP), requiring utilities to pay, if they fail to purchase enough renewable energy to achieve the yearly target. These comments suggest NYSERDA should utilize any ACP funds to procure more renewable energy to ensure that the State's overall 50% target will be met. They also state a belief that nuclear energy is neither clean nor renewable and therefore should be kept completely separate from the Clean Energy Standard.

The full versions of party comments can be found at the Department of Public Service website under the CES and case numbers, 15-E-0302 and 16-E-027. Staff and the Commission have considered the comments in their entirety.

Entities that Commented on the Clean Energy Standard White Paper and Cost Study

Acadia Center
Alliance for a Green Economy (AGREE) and Nuclear Information and Resource Service (NIRS) (Collectively: AGREE)
Alter NRG Corp (AlterNRG)
American Biogas Council (ABC)
American Council for an Energy Efficiency Economy (ACEEE)
American Nuclear Society (ANS):

American Petroleum Institute (API)
Ampersand Hydro, LLC.
Assemblywoman Barbara Lifton, 125th District.
Assemblywoman Ellen C. Jaffee, 97th District.
Assemblyman Robert Oaks, 130th District.
Assemblyman William A. Barclay, 120th District.
Assemblywoman Amy R. Paulin, Chair, Committee on Energy.
Assemblyman Steve Englebright, Chair, Committee on Environmental Conservation. (Assembly Members Included): Thomas J. Abinanti; William Colton; Jeffrey Dinowitz; Patricia A. Fahy; Richard N. Gottfried; Ellen C. Jaffee; Brian Kavanagh; Barbara S. Lifton; Donna A. Lupardo; William Magee; John T. McDonald, III; Walter T. Mosley; Daniel J. O'Donnell; Steven Otis; Michelle Schimel; Rebecca A. Seawright; Albert A. Stirpe, Jr.; Fred W. Thiele, Jr.; Daniel Quart; and Latrice M. Walker.
Azure Mountain Power Co. Boralex Hydro Operations, Inc., Chasm Falls Hydro, Inc., Eagle Creek Renewable Energy, Gravity Renewables, Kruger
Energy Inc./KEI USA Power Management Inc., Oakvale Hydro, Riverrate Glass & Electric
Bloom Energy Corporation (Bloom Energy)
Boilermakers Local Lodge No. 5
Brookfield Renewable Energy Group (Brookfield)
Business Council of New York State, Inc. (BCNY)
Canadian Wind Energy Association (CanWEA)
Citizens Environmental Coalition (CEC)
Citizens for Local Power (CLP)
City of New York (City)
Clean Energy Organizations Collaborative (Filing Jointly): Acadia Center; Citizens for Local Power; Citizens Campaign for the Environment; Environmental Advocates of New York; National Wildlife Federation; Natural Resources Defense Council; Nature Conservancy; New York Public Interest Research Group (NYPIRG); Pace Energy and Climate Center; and Sierra Club (collectively CEOC)
Community Energy, Inc. (CEI).
Constellation Energy Nuclear Group, LLC (CENG)
Consumer Power Advocates (CPA)
Cornell University—Biological and Environmental Engineering—College of Agriculture and Life Sciences (Cornell)
Council on Intelligent Energy & Conservation Policy (CIECP) and Promoting Health and Sustainable Energy (PHASE)
Deepwater Wind
DONG Energy Wind Power U.S., Inc. (DONG Energy)
Dutchess County Legislature
EDP Renewables North America (EDPR)

Empire State Forest Products Association (ESFPA):
Energy Efficiency for All: (Filing Jointly) Association for Energy Affordability; Association for Energy Affordability; Center for Working Families; Enterprise Community Partners, Inc; Green & Healthy Homes Initiative; Natural Resources Defense Council; Pace Energy and Climate Center; and WE ACT for Environmental Justice (EEA)
Energy Infrastructure Advocates, LLC (EIA)
Energy Recovery Council (ERC)
Energy Vision (EV)
Entergy Nuclear Indian Point 2, LLC; Entergy Nuclear Indian Point 3, LLC; Entergy Nuclear FitzPatrick, LLC; and Entergy Nuclear Operations, Inc. (Entergy Entities)
Environmental Defense Fund (EDF)
Environmental Energy Alliance of New York: Central Hudson; ConEd of New York; CCI Roseton; Dynegy Power LLC; PSE&G Long Island; National Grid; NYPA: NYS Electric & Gas Corp.; NRG Energy, Inc.; Orange & Rockland Utilities, Inc.; Rochester Gas & Electric Corp.; Selkirk Cogen; TransCanada; and US Power Generating Co (Collectively: The Alliance)
Environmental Entrepreneurs - New York Chapter (E2)
EnviTec Biogas USA
EtaGen, Inc.
General Electric Company (GE)
Grassroots Environmental Education
Gravity Renewables (Gravity)
Greater Oswego-Fulton Chamber of Commerce
Green Education and Legal Fund (GELF)
GreningUSA, Inc.
Hydro Quebec Energy Services (U.S.) Inc. (HQUS)
Independent Power Producers of New York, Inc. (IPPNY)
Indian Point Safe Energy Coalition (IPSEC)
Institute for Policy Integrity, NYU School of Law (Policy Integrity)
Intellectual Decisions on Environmental Awareness Solutions (IDEAS).
International Brotherhood of Electrical Workers, Local Union #43 (IBEW)
Joint Landowners Coalition of New York, Inc.
Joint Utilities: Con Edison, Niagara Mohawk Power Corporation d/b/a National Grid, and Orange and Rockland Utilities, Inc (JU)
KEI (USA) Power Management Inc.(KEI)
Laborer’s International Union of North America, Laborer’s Local Union No. 633
Long Island Federation of Labor, AFL-CIO
Low Impact Hydropower Institute (LIHI)
Manufacturers Association of Central New York (MACNY)

Multiple Intervenors (MI)
National Energy Marketers Association (NEM)
National Fuel Cell Research Center (NFCRC)
Natural Gas Supply Association (NGSA)
Natural Resources Defense Council; E4TheFuture; CLEAResult; Lime Energy; Association for Energy Affordability; and Alliance for Clean Energy New York:(Aiming Higher Report)(NRDC)
Newtrient
New York Affordable Reliable Electricity Alliance (New York AREA)
New York Association of Public Power (NYAPP)
New York Battery and Energy Storage Technology Consortium (NY-BEST)
New York Bioenergy Association (NYBA)
New York Climate Action Group
New York Cow Power Coalition (Cow Power)
New York Farm Bureau (NYFB)
New York Geothermal Energy Organization (NY-GEO)
New York Independent System Operator, Inc., (NYISO)
New York Municipal Power Agency (NYMPA), and the Independent Energy Efficiency Program (IEEP)
New York Power Authority (NYPA)
New York Solar Energy Industries Association (NYSEIA)
New York State Department of Environmental Conservation (DEC)
New York State, Department of State, Utility Intervention Unit (UIU)
New York State Economic Development Council (NYSEDC)
New York State Electric & Gas Corporation (NYSEG), Rochester Gas and Electric Corporation (RG&E), subsidiaries of Avangrid, Inc. and Central Hudson Gas & Electric Corporation (Central Hudson): (The Companies)
New York State Utility Labor Council, International Brotherhood of Electrical Workers Local 97, and Utility Workers Union of America, Local 1-2 (Collectively: Labor Coalition)
Northeast Clean Heat and Power Initiative (NECHPI)
Northeast Energy Efficiency Partnerships (NEEP)
NRG Energy, Inc. (NRG)
Nuclear Energy Institute (NEI)
Nucor Steel Auburn, Inc. (Nucor)
OneGRID
Onondaga County Legislator Kevin Holmquist
Operation Oswego County, Inc.
City of Oswego City: William J. Barlow, Jr., Mayor.
Oswego County Legislature
Otego Microgrid Ratepayers (Otego)
Otsego 2000 and Pepacton Institute (Otsego)
Plumbers & Pipefitters Local Union 112

Plumbers & Steamfitters Local 73
Port Authority of NY & NJ (Port Authority)
Poseidon Transmission 1, LLC (Poseidon)
PosiGen Solar Solutions (PosiGen)
PSEG Long Island (PSEG LI)
Recurrent Energy (Recurrent)
ReEnergy Holdings, LLC (ReEnergy)
Renewable Energy Industry: The Alliance for Clean Energy New York, American Wind Energy Association, Advanced Energy Economy Institute, New England Clean Energy Council, Northeast Solar Energy Industries Association, Northeast Vote Solar, Northeast Clean Energy Council, and Distributed Wind Energy Association: (Collectively: Renewable Energy Industry)
RENEW Northeast, Inc. (RENEW)
Retail Energy Supply Association (RESA).
Rockland County Legislature
Sierra Club Atlantic Chapter
Sierra Club Lower Hudson Group
Senator Liz Krueger, 28th District
Senator Ruth Hassell-Thompson, 36th District
Senator Joseph P. Addabbo, Jr., 15th District
Senator Velmanette Montgomery, 25th District
Senator Toby Ann Stavisky, 16th District
Senator Brad Hoylman, 27th District
Senator Martin Malave Dilan, 18th District
Senator Jose M. Serrano, 29th District
Senator Gustavo Rivera, 33rd District
Senator Daniel Squadron, 26th District
Senator Todd Kaminsky, 9th District
Senator Jose Peralta, 13th District
Senator Bill Perkins, 30th District
Senator Jesse Hamilton, 20th District
Senator Keven S. Parker, 21th District
Senator George Latimer, 37th District
Senator James Sanders, Jr., 10th District
Senator Timothy M. Kennedy, 63rd District
Senator Adriano Espaillat, 31st District
Senator Roxanne J. Persaud, 19th District.
Senator Patty Ritchie, 48th District
Senator Phil Boyle, 4th District
Senator Rich Funke, 55th District
Senator Joseph Robach
Smart Wires, Inc (Smart Wires)
Solar Energy Industries Association and Vote Solar: (Solar Parties)
Solar Policy Forum

SREC Trade, Inc.
State University of New York, College of Environmental Science and Forestry, Department of Environmental Resources Engineering: (SUNY).
Suffolk County Legislator, Sarah S. Anker, 6th District, Mt. Sinai, NY.
Suffolk County Legislature
Taylor Biomass Energy, LLC (Taylor)
Town of Brookhaven (Brookhaven)
Town of Scriba (Scriba)
Transmission Developers Inc. (TDI)
Ulster County Legislature
Upstate Energy Jobs
Vanguard Renewables (Vanguard)

Summary of Initial and Reply Party Comments Related to the White Paper

Acadia Center

Initial

The Acadia Center supports utilities to include energy efficiency in the CES, by asking utilities to procure all cost-effective energy efficiency with annual targets ramping up to 2.5% over the next three years. The Acadia Center believes that energy efficiency investments avoid the need for expensive new generations and infrastructure and lowers overall system costs. The Acadia Center does not support a specific tier or carve out for energy efficiency.

The Acadia Center is concerned the CES may work to discourage the adoption of heat pumps and electric vehicles because they add electric new demand and thus increase the amount of renewables required by the program. Acadia Center believes that heat pumps and electric vehicles are an important elements to a deep greenhouse gas reduction pathway. Finally, the Commission should clarify the Clean Energy Advisory Council structure and authority.

Alliance for a Green Economy (AGREE) and Nuclear Information and Resource Service (NIRS) (Collectively: AGREE)

Initial

AGREE generally supports Staff’s renewable tier structure, deploying both new renewables and preserving old renewables, but stresses the importance for the state to provide a mechanism to ensure the development of offshore wind by creating a specific wind tier. According to AGREE, they support other organizations in calling for an offshore wind tier with the target of developing 5,000 megawatts of offshore wind by 2025.

Whenever possible, AGREE advocates that the CES should support local or community-owned renewable energy development. AGREE says the economic and jobs impact of local renewable energy development are much higher when compared to out of state purchasing. AGREE urges the Commission to require LSEs purchase RECs from in-state sources, with a priority on locally owned and community owned renewable energy. Further, this could be achieved through a carve-out of RECs in Tier 1 reserved for locally-owned and community owned resources, or through a co-incentive that recognizes the added benefit to ratepayers and communities of locally and community owned resources.

AGREE supports higher targets for renewable energy in Tier 1 but believes that the goals of the CES are conservative and urges the Commission to set higher targets through 2030. Further, AGREE recommends the Commission not to backload the development of renewable energy, by setting lower targets in near-term years and higher targets in later years.

AGREE recommends the CES include aggressive and enforceable efficiency standards. The organization believes enforceable energy efficiency targets would yield substantial reductions in greenhouse gas emissions.

AGREE supports an Alternative Compliance Mechanism (ACP) that sets an ACP high enough only triggered in circumstances of real scarcity of RECs. However, AGREE is concerned that there is no real alternative compliance mechanism for the nuclear tier as it will be will presumably be the costs associated to keep the nuclear plants from closing, regardless of price.

AGREE advocates for the requirement of utilities enter into long-term bundled Power Purchase Agreements for large-scale renewables in the CES as a way to keep costs low. AGREE recommends the Commission implement a progressive rate structure that ensures affordability for low-income households who the burden for the nuclear and renewable energy resources supported through the CES will fall disproportionately on low-income house households.

AGREE does not support the creation of a Tier 3 for nuclear facilities. According to AGREE, there is no state policy in the State Energy Plan on how to address the potential closure of nuclear reactors before their license expires. AGREE points out that the CES is relying the nuclear facilities to prevent a near-term increase in greenhouse gas emissions. AGREE notes the State Energy Plan has no stated near-term greenhouse gas emission targets to justify the proposed nuclear policy. AGREE suggests the reported economic benefits are overblown and does not factor in any of the health and environmental costs of nuclear. AGREE believes there are far more cost effective ways to support communities that will be affected by the loss of jobs and revenue should a facility shut down. AGREE refers to previous Commission decisions, such as in the 2004 RPS case, refusing to classify nuclear power as clean energy.

Moreover, there is no technical basis for Tier 3 because Staff has failed to provide any analysis that demonstrates the case that New York cannot meet its emissions objectives without subsidizing aging, and uncompetitive reactors.

AGREE stresses the creation of ZECs will force consumers to pay above-market rates for electricity from nuclear plants, which they do not receive from other electricity sources. AGREE is concerned that Staff has not stated what the non-energy costs are related to the ZECs or how the proposal was created. AGREE contends that the nuclear tier would expend potentially billions of dollars on subsidies, while only resulting in one nuclear reactor remaining online and presumably still requiring additional renewables and efficiency to displace fossil fuel generation.

According to AGREE, nuclear power is not a clean energy source and has major environmental justice impacts, through the mining and processing of uranium for reactor fuel and in the storage of radioactive waste.

AGREE supports 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.

Reply

In its reply comments, AGREE notes that it is clear the nuclear tier does not enjoy widespread support and encourages 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. AGREE states that no entity should be forced to buy ZECs and those entities 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.

AGREE questions the true value of ZECs to the consumer and if consumers are forced to buy a nuclear product, it is incumbent upon Staff and the Commission to define the exact product being sold. AGREE finds that no party explained how preventing the retirement of aging nuclear reactors in any way facilitates the development of renewable energy. They argue that subsidies intended to prop up uncompetitive nuclear reactors divert ratepayer dollars from investment in renewables and efficiency and erect market barriers to their development. AGREE does not with some commenters that if nuclear support facilities shut down, they will be replaced by natural gas. AGREE states that any temporary increase in natural gas facilities will immediately begin to ease as additional renewable and efficiency gains are made. AGREE opposes Constellation Energy Nuclear Group's (CENG) proposal for long term contract commitments and ZEC payments and urges the Commission to reject all CENG's recommendations.

AGREE supports 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.

AGREE states it generally supports a fairly narrow definition of what kinds of resources should be eligible for public support through RECs, excluding certain biofuels, fuels cells, waste-to-energy, and new large-scale hydro. AGREE reiterates its support for an offshore wind tier and to explore New York City's request for a downstate tier. AGREE supports comments by NY-GEO about the state should transition to renewable-ready space heating and electric vehicles.

AGREE urges the Commission to adopt PosiGen's recommendations that ACPs be specifically used to support low and moderate income energy efficiency and renewable energy programs.

Alliance for a Green Economy (AGREE New York) and Nuclear Information and Resource Service (NIRS): Memo by: Richard L. Brodsky, Esq.

Supplemental

Richard L. Brodsky (Brodsky) writes that "there are serious questions about the Governor's ability to "direct" either the Public Service Commission (PSC) or the Department of Public Service (DPS), which are not Executive Agencies subject to the constitutional control of the Governor."

Brodsky writes that New York's authority to create enforceable Clean Energy Standards originates in the laws that mandate the creation of a "State Energy Plan." (The "Plan) to adopt a "state energy plan". Therefore, Brodsky argues the PSC actions pursuant to their regulatory authority over energy issues must be consistent with the Plan and if the Plan does not require or authorize an action, the PSC cannot adopt it. Thus, the Governor cannot "mandate" or "direct" the PSC to adopt any action or policy inconsistent with these laws, no matter how he formulates his commands.

Brodsky believes that there is a legal significance of this process that rests on the uncertain relationship between the Governor and the Commission because it is a constitutionally independent agency not subject to the control or direction of the Governor. Brodsky argues the Governor has the right and the obligation to inform the Commission of his views and to urge such actions as he deems in the public interest, but he may not direct or control the outcome of a Commission proceeding.

Brodsky further states, that the Governor's decision to “mandate” a proceeding and particular policies lays the groundwork for legal difficulties. Brodsky states there seems to be a recognition of this difficulty in the decision to address Ms. Zibelman as the “Chief Executive Officer” of DPS and directing DPS to convene a proceeding, rather than as Chair of the Commission. DPS staff do not have the authority to convene a proceeding, or to take regulatory action.

Brodsky states that the Commission may not adopt the Governor's specific policies unless the record shows support for them and the Commissioners exercise their independent fiduciary duties and their independent judgment in support of them. Brodsky suggests the Nuclear Tier and its sub-tiers appear to be legally vulnerable on this basis.

Brodsky does not believe the White Paper presents evidence sufficient and legal justification sufficient to support the creation of a Nuclear Tier. Secondly, if the Nuclear Tier is created, Brodsky does not believes the Governor's directive to include only “upstate' nuclear facilities and exclude Indian Point is supported by evidence and law.

Brodsky states that the White Paper ignores the more profound fiscal realities caused by capital expenditures needed to prop up aging and deteriorating plants. Brodsky points out that two of the oldest nuclear reactors are still running in the world: Nine Mile Point 1, which will be 47 in 2016, is the oldest operating reactor in the U.S., and the third-oldest in the world; Ginna is the fourth-oldest in the U.S., and the seventh-oldest in the world.

Brodsky believes that the White Paper fails to present any reliable cost analysis of the nuclear subsidy and as such is legally and logically insufficient to justify the Nuclear Tier. In particular, the cost projections in the White Paper and associated documents are so broad and insubstantial that the decision to create a subsidy program cannot be evaluated. Brodsky argues that Staff’s estimate of five-year cost for subsidizing the Upstate reactors ranges from $59 million to $658 million is an unusually uncertain and unreliable range of likely program costs.

Also, Brodsky asserts that the White Paper proposes no mechanism for recovering Nuclear Tier subsidies from facilities that become profitable, further undermining the White Papers costs estimates. Brodsky states that this level of uncertainty over program costs makes it impossible for the Commission to reasonably base a decision creating a Nuclear Tier on the data and argument now in the record.

Brodsky believes that a more reliable estimate of the cost of the nuclear subsidy is $4.8 billion through 2030 and that amount renders the subsidy destructive of any reasonable program to improve carbon emissions. These funds, employed in other parts of the CES proposal would do more and do it more effectively.

Brodsky states that the White Paper does not provide a basis, under the terms and restrictions contained in the State Energy Plan, for Commission adoption of a Nuclear Tier.

Brodsky states that the “Upstate facilities” are eligible, consistent with the Governor’s mandate. Indian Point is not eligible. Brodsky believes that there are several legal weaknesses in the legal distinction between plants. First, the term “fully licensed” is ambiguous and unclear as a matter of law because a nuclear facility cannot operate if it is not “fully licensed”. Further, Indian Point is now in the midst of a protracted proceeding which the NRC characterizes as a “re-licensing” while other commentators have pointed out that the original Indian Point license has expired and that the NRC is actually deciding whether to issue a “new” license to Indian Point. Brodsky opines the assertion by the DPS staff that there are nuclear facilities in New York which are not “fully licensed” is conclusory, unsupported by argument or evidence and insufficient, as a matter of law, to sustain the distinction and that the “fully licensed” distinction survives this initial problem, it is still subject to legal challenge on other grounds,

Brodsky states that if Indian Point is to be excluded, there must be a rational description of how these purported virtues are overcome by some other characteristic of Indian Point rendering it unsuitable for subsidy. According to the White Paper the characteristic of Indian Point that removes it from the Nuclear Tier is that it is not “fully licensed”.

Brodsky notes that in defense of this distinction the White Paper states: "Requiring LSEs to procure ZECs from entities that may not be allowed to operate would cause inefficiency in the marketplace and possible unwarranted costs to consumers.” Brodsky states there is no explanation of how inefficiencies would occur and what they might be, there, it is insufficient to justify the exclusion.

Brodsky further notes that the Governor has mandated this Proceeding, and that the mandate included specific direction to exclude Indian Point as insufficiently licensed: “...elimination of Upstate nuclear facilities, operating under valid federal licenses, would eviscerate the emission reductions achieved

through the State's renewable energy programs, diminish fuel diversity, increase price volatility, and financially harms host communities. This support should be separate and distinct from the renewable energy."

Brodsky states that the Governor's political and policy decision to attempt to close Indian Point as unsafe and unnecessary is widely known as well as to support continued operation of upstate nuclear facilities as economically important to the upstate economy. However, Brodsky believes neither is a basis for Commission action pursuant to the Plan.

According to Brodsky, the legal foundation of the CES is the Plan. The CES is legally valid only insofar as it is founded in the language and purposes of the Plan. Brodsky states that it is difficult to find in the Plan any basis for distinction between zero emission facilities because of their location, local economic impact, or whether they are "fully licensed." If the Plan does not permit such distinctions the Commission may not include them in the CES.

Brodsky states that the record and legal arguments used by the White Paper to justify creation of a Nuclear Tier, and a distinction between Indian Point and Upstate nuclear facilities, are defective and insufficient. According to Brodsky, if the Commission wishes to adopt the Nuclear Tier, it needs to provide significant new argument and evidence of cost, necessity, and impact on the public interest. If it wishes to distinguish between Indian Point and Upstate nuclear facilities for inclusion in the Nuclear Tier, it needs to provide significant new evidence and argument supporting the distinction.

Alter NRG Corp (AlterNRG)

Initial

AlterNRG generally supports the Clean Energy Standard proposal. However, Alter NRG is concerned that the anticipated heavily reliance on intermittent renewable power to meet the 50 by 30 target will place an enormous strain on the state's electric grid and potentially threaten system reliability and could be exacerbated by the forced or voluntary retirement of the baseload coal or nuclear plants. AlterNRG believes that natural gas facilities will replace these baseload facilities given the low GHG footprint of these facilities.

AlterNRG supports the conversion of mixed-waste streams into energy, which are currently prohibited in New York. AlterNRG describes that power generation projects using syngas created with its advanced gasification technology can make a significant contribution to the State's renewable energy and GHG

goals, while providing other important environmental, economic and grid benefits not available from other renewable energy sources. According to their comments, commercial scale biomass create many more permanent local jobs than wind, solar or other renewable projects. Alter NRG suggests that reducing landfill methane emissions can be avoided by diverting waste from landfills.

AlterNRG requests modifications should be made to the Biomass Power Guide (BPG)to allow for post-recycled mixed waste streams to create synthetic gas and the PSC should commence a proceeding to determine what additional changes should made to make the technology eligible for the CES. In addition, AlterNRG objects to the comparative emissions testing included in the BPG because it adds to the upfront uncertainty of the projects.

AlterNRG specifically recommends the Commission recognize power projects using syngas produced from mixed waste streams by low-emissions gasification technologies eligible for Tier 1 in the CES.

Ampersand Hydro, LLC (Ampersand)

Initial

Ampersand states that many small hydro owners are being forced out of business due to unfair market arrangements and cannot sustain increasing costs of regulatory compliance while also experience minimal margins as a results of artificially depressed market prices. Ampersand continues to say that many owners are forced to challenge their property assessments which are based on wholesale market revenues which have not prevailed for several years. Ampersand proposes a social benefits adder (SBA) to compensate small hydro for their environmental attributes and for preserving local infrastructure. Ampersand suggests the SBA be set at four cents per kWh, escalated annually at the consumer price index (“CPI”) and would be reduced proportionally in months in which a producer earned more than specified thresholds from wholesale markets. According to Ampersand, the SBA strikes a balance between economic efficiency for ratepayers and fair returns for producers. Ampersand continues to say that the proposal would provide reasonable revenue to small hydro owners, the level of the SBA is less than the value of social benefits provided and it is administratively simple. Ampersand argues that the SBA will unlikely make small hydro owners rich but it is likely to cost-effectively maintain the benefits for consumers.

Assemblyman William A. Barclay, 120th District

Initial

Assemblyman Barclay expresses strong support for Zero Emission Credits for nuclear generating facilities proposed under the Clean Energy Standard. The Assemblyman states that he represents Oswego County where Nine Mile Point I and II and the James A. FitzPatrick Nuclear Power Plant are located. Assemblyman Barclay stresses the importance of the CES proceeding because Entergy has stated that it intends on decommissioning FitzPatrick due to economic challenges. Assemblyman Barclay is concerned that if one of the state's nuclear power plants were to no longer operate it would hinder New York's ability to reach its carbon-reduction goal of 50% by 2030.

According to the Assemblyman, nuclear power plants are economic engines for the communities in which they are located and the closure of the FitzPatrick Nuclear Power Plant will be economically devastating for Oswego County and the region. The Assemblyman states that if the FitzPatrick plant does close, the community could lose 615 highly skilled and high paying full-time jobs and an additional 1,000 jobs that are created during refueling outages. Assemblyman Barclay requests the state to implement measures under the Clean Energy Standard that will value carbon-free energy generation and finally recognize nuclear for its capacity, reliability and zero emissions and work to ensure the continued operation of those nuclear facilities experiencing financial challenges —Ginna, Nine Mile Point I and II and in particular, the James A. FitzPatrick Nuclear Power Plant.

Assemblywoman Ellen C. Jaffee, 97th District

Initial

Assemblywoman Jaffee strongly supports Tier 1 and Tier 2 proposed Clean Energy Standard to ensure the purchase of new and existing renewable energy resources but strongly opposes to the inclusion of subsidies for nuclear reactors as proposed in Tier 3. The Assemblywoman believes that including the Tier 3 nuclear subsidies is the unsupported assumption that New York State cannot meet its 2030 greenhouse-gas reduction goals if the financially unsustainable upstate nuclear plants are allowed to close. According to Assemblywoman Jaffee, Tier 3 subsidies also contradict an important founding principle of Reforming the Energy Vision- allowing the marketplace to work. Assemblywoman Jaffee argues that the proposed Tier 3 nuclear subsidies would be better invested in cleaner, safer alternatives such as: wind,

including the rapid deployment of off-shore wind for the greater New York City metropolitan area, hydroelectric, tidal, and community- and utility-scale solar, as well as storage and energy efficiency measures. In addition, Assemblywoman Jaffee stresses that nuclear energy is not clean or carbon-free, and it is responsible for carbon emissions during mining, milling, enriching, construction, transportation, and decommissioning.

Assemblywoman Barbara Lifton, 125th District

Initial

Assemblywoman Lifton strongly supports Tier 1 and Tier 2 of the proposed Clean Energy Standard but strongly opposes the inclusion of subsidies for aging, unsafe, and economically unsustainable nuclear reactors as proposed in Tier 3. The Assemblywoman argues that including the Tier 3 nuclear subsidies in the Clean Energy Standard is an unsupported assumption that New York cannot meet its 2030 greenhouse-gas reduction goals if the financially-unsustainable upstate nuclear plants are allowed to close. According to the Assemblywoman, this has been disproven by many experts, who have found it is technologically and economically feasible to transition to a carbon-free and nuclear-free energy system. Assemblywoman Lifton emphasizes that nuclear power is not renewable or clean. Its entire fuel cycle poisons mining communities, contributes to greenhouse gas emissions, releases radiation into the environment around reactors, and creates high-level radioactive waste. Assemblywoman Lifton supports the Nuclear Information and Resource Service and Alliance for a Green Economy estimates, which the proposed nuclear bailout could cost between $3.5 billion and $4.5 billion. However, the Assemblywoman believes if the Department of Public Service thinks should publicly release its calculations and methodology. Assemblywoman Lifton claims it is wrong to require our hard working ratepayers to bail out nuclear reactors, which would be a form of corporate welfare that will be borne by all levels or government, schools and universities, hospitals and health care facilities, business large and small, and residents throughout New York. Instead, the Assemblywoman urges the Public Service Commission and Governor Cuomo to support communities through the transition to a green economy which can include nuclear decommissioning jobs, transitional support for municipalities and school districts, and the siting of green manufacturing in Upstate New York.

Assemblyman Robert Oaks, 130th District

Initial

Assemblyman Oaks supports the clean energy standard to reduce carbon emissions, and to ensure that upstate nuclear energy plants like Ginna, Fitzpatrick and Nine Mile Point Units One and Two, continue to operate. Assemblyman Oaks believes that nuclear energy must be part of the mix if the carbon-cutting plan is to work. According to the Assemblyman, Upstate New York's nuclear energy plants support 25,000 jobs—both directly and indirectly through the energy supply chain—including many of my constituents. Further, nuclear energy is the most reliable source of zero-emission energy, providing clean electricity 24 hours a day, seven days a week through all weather conditions. Assemblyman Oaks states that Upstate nuclear facilities generally operate at 90% plus capacity year in and year out. The Assemblyman stresses that these plants are safe and emission-free, and we should keep them operational and use them to the greatest extent possible to ensure that our emissions goals will be accomplished in an affordable manner. Assemblyman Oaks requests that Ginna, FitzPatrick and Nine Mile Point Units One and Two are able to remain open by including their clean energy contribution in the Clean Energy Standard.

Assemblywoman Amy Paulin, Chair, Committee on Energy (also signed by the following Assembly members): Steve Englebright, Chair, Committee on Environmental Conservation; Thomas J. Abinanti; William Colton; Jeffrey Dinowitz; Patricia A. Fahy; Richard N. Gottfried; Ellen C. Jaffee; Brian Kavanagh; Barbara S. Lifton; Donna A. Lupardo; William Magee; John T. McDonald, III; Walter T. Mosley; Daniel J. O'Donnell; Steven Otis; Michelle Schimel; Rebecca A. Seawright; Albert A. Stirpe, Jr.; Fred W. Thiele, Jr. Daniel Quart and Latrice M. Walker

Initial

The Assembly members support fifty percent renewable energy mandate of the Clean Energy Standard. The Assembly members believe the Clean Energy Standard should enforceable by requiring aggressive annual renewable electricity targets and avoid '"backloading" these targets. Further, the Assembly members argue the CES should be enforced through "Alternative Compliance Payments" and ACP funds should be directed to the New York State Energy Research and Development Authority (NYSERDA) to procure more renewable energy or to reduce the costs of renewable development and ensure that the fifty percent target will be met. In addition, the ACP amount should be set at a level high enough to encourage the utilities to purchase renewable energy rather than pay the ACPs. Assembly members

advocate for an offshore wind tier because the state needs to make a long-term, large-scale commitment to unlock its massive potential as a renewable energy source.

According to the Assembly members, the CES should mandate yearly energy efficiency targets for utilities of at least two percent annual energy savings to help ensure the state achieves the larger target of securing fifty percent of our electricity from renewables while saving customers money. The members also recommend applying the CES to all utilities and power authorities statewide, including LIPA/PSEG LI and the New York Power Authority (NYPA) as well as other electricity suppliers. The Commission should facilitate a parallel LIPA and NYPA implementation plan development track that will convene these agencies and adopt compliance mechanisms that meet or exceed the Clean Energy Standard. The Assembly members supports long-term contracts to encourage and support a competitive market and ensure stable partners.

The members state the CES should prioritize in-state renewables and should not be a route to merely import renewable energy from other states. And, whenever possible, the CES should promote community and local customer-generator ownership of renewable energy in order to smooth the way for local support for renewable energy and ensure the highest economic benefits to New Yorkers. The Assembly members opposes utility ownership of generation in order to have private developers continue to bear investment risk.

Bloom Energy Corporation (Bloom Energy)

Initial

Bloom Energy (Bloom) opposes a Clean Energy Standard that will rely exclusively on bundled PPAs because it will effectively preclude distributed generation projects located behind customer meters from participation. Bloom Energy recommends that the Commission initially allow for fifty percent of the CES obligation to be achieved via REC only contracts and fifty percent to be achieved via bundled energy + REC contracts. Bloom believes the Commission should mandate LIPA and NYPA as part of the CES to ensure the downstate region is receiving the appropriate amount of clean generation. If the Commission is to impose an ACP feature in the CES, Bloom recommends it should be very carefully designed to avoid its future use as a revenue raiser for other programs but should be used to continue funding CES activities.

Boilermakers Local Lodge No. 5

Initial

The Boilermakers support the CES, particularly, the inclusion of nuclear energy in the CES, and the recognition of nuclear power as a carbon free energy sources.

Brookfield Renewable Energy Group (Brookfield)

Initial

Brookfield supports the Clean Energy Standard and agrees with Staff that legacy resources are crucial to meeting the 50 by 30 goal and support will be necessary to ensure continued operation of those resources. Brookfield believes Tier 1 and Tiers should be treated on the same level playing field in regard to annual targets and pricing mechanisms. Brookfield supports minimizing the number of tiers by collapsing Tier 2A and Tier 2B into a single Tier 2 to provide the simplicity needed to ensure the program is easy for consumers and participants to understand and apply, and provide stability and predictability in a non-discriminatory manner. Brookfield favors an appropriate Alternative Compliance Payment (ACP) that incentivizes new generation and supports the maintenance of all existing generation and should not discriminate between new and existing resources. In addition, Brookfield states that the ACP must be high enough to support operations of existing plants and should differentiate between new or legacy tiers.

Brookfield argues that long-term contracts should be available to all tiers, especially to existing resources to provide revenue stability. Brookfield advocates for Tier 1 and 2 eligibility for out-of-state energy facilities, including new or existing hydropower, as long as the RECs are tracked and deliverable to New York via NYGATS. Brookfield is disappointed that the social cost of carbon was not accounted for in the net present value calculation for Tier 2B in the Cost Study and as a result, the cost of Tier 2B appears unnecessarily high.

Reply

In its reply comments, Brookfield reiterates its support to consolidate tiers 2A and 2B into one tier for legacy resource. Brookfield concurs with Gravity Renewables that REC prices will need to be consistently valued and set above market price to attract contract for renewables. Brookfield joins other commenters recommending mandatory targets through 2020, or interim targets to ensure compliance with the CES and take advantage of the federal tax incentives. Brookfield strongly supports TDI recommending that the CES include procurement of

hydropower to firm and integrate intermittent resources into the grid. To expand upon comments of other hydropower providers regarding the social benefits of hydropower and ways to monetize that value, Brookfield Renewable reiterates its suggestion to consider new and existing LIHI Certified facilities as eligible for Tier 1, as it would encourage generators with hydro assets, both in development and operation, to invest additional capital to ensure hydro facilities meet the most stringent criteria for environmental protection.

Along with other parties, Brookfield stresses that that the use of long-term, bundled PPAs for both Tiers 1 and 2, with credit worthy parties will result in the lowest-cost development of the renewable projects necessary for New York to reach its ambitious goals. Brookfield supports comments that advocate for eligibility of out-of-state resources that meet the requirements outlined in the White Paper and believes that all privately held, out-of-state energy facilities, not just those located in adjacent territories should be eligible as long as the RECs and the associated energy are deliverable into New York and the RECs are tracked via NYGATS. As suggested by IPPNY, Brookfield agrees the Commission should clarify that out-of-state resources that are owned or supported by governmental entities, either directly or indirectly, should not be eligible. According to Brookfield, the Cost Study should have recognized all competitive opportunities associated with Tier 2B resources, which appear to be significantly undervalued relative to their existing and emerging opportunities elsewhere.

Town of Brookhaven

Initial

The Town of Brookhaven (Brookhaven) is strongly supports the development of offshore wind facilities serving New York City and Long Island and recommend that the CES program design be modified to include a commitment to purchase at least 2,000 MW of offshore wind, with an initial procurement in 2017. Brookhaven believes the use of offshore wind provides several economic and environmental benefits to the community and state. Brookhaven argues the CES could facilitate the development of cost-effective offshore wind for downstate New York by requiring long term bundled contracts to allow for such projects to offer and compete for pricing that is differentiated from renewable energy delivered elsewhere. Brookhaven explains that this could be accomplished through a number of mechanisms including an offshore wind tier, a REC multiplier for offshore wind or other mechanisms. If a technology-specific basis for offshore wind is not favored, Brookhaven suggests an alternative could be a

geographic basis, with a tier or multiplier for renewable energy projects that are located within 50 miles of New York City or Long Island and which have their initial point of interconnection in Zone J and Zone K.

Business Council of New York State, Inc. (BCNY)

Initial

The Business Council of New York (BCNY) has significant concerns about the future of energy intensive industries in New York if the proposed Clean Energy Standard (CES) is adopted. Furthermore, BCNY does not have confidence in the Clean Energy Standard White Paper Cost Study (Cost Study) since the cost-benefit analysis is unsound. BCNY suggests that the CES fails to promote the progress of REV because it exposes consumers to prospective greater energy costs while not properly addressing critical environmental needs. The BCNY is concerned that the CES will require the build out of additional transmission to meet the demands of remotely located wind projects and the CES does not encourage or incentivize the location of renewable asset in a manner that will reduce the need for additional grid build out. The BCNY strongly recommends that New York businesses should be exempt from the CES.

The BCNY believes that New York has a real opportunity to be a leader in the solar industry and the CES design should continue to foster a business climate that allows for the growth of New York solar. However, it must do so without imposing large costs on other businesses that would stunt economic growth. The BCNY strongly recommends that New York should take immediate steps to support the continued operation of our nuclear facilities including the continued operation of Indian Point 2 and 3. The BCNY encourages policy makers to focus policy on decarbonization of the whole economy (not simply emissions) and seek gains in efficiency, expand and retain carbon free energy, and focus on innovation. The BCNY argues the Cost Study fails to fulfill the requirements of the CES and does not allow the Commission to evaluate the range of costs because the study hides the potential true Gross Program Cost by excluding the cost of energy and the capacity value when determining Gross Program Cost.

Canadian Wind Energy Association (CanWEA)

Initial

CanWEA suggests that the CES should include periodic solicitations for transmission projects capable of delivering incremental renewable energy to New York. CanWEA believes that

the Canadian hydropower will balance out the wind energy and provide a reliable energy source. CanWEA recommends that the PSC should broaden hydropower's eligibility in the CES and hydropower should count toward Tier 2A compliance. According to CanWEA, the PSC should also allow such blended products delivered over new transmission to compete for Tier 1 and Tier 2A long-term contracts, in order to unlock remote Tier 1 resources, and enable their efficient deliver to New York.

Citizens Environmental Coalition (CEC)

Reply

The Citizens Environmental Coalition (CEC) argues the Proposed Massive Nuclear Subsidy has no factual, policy or legal basis of support at the federal or state level and the lack of such support is being addressed by attempting to make it fit into the ongoing REV proceeding and the Clean Energy Standard. CEC states that New York has unique experience related to nuclear waste having embraced the experiment in nuclear waste reprocessing at West Valley that heavily contaminated the site, and 50 years later costs the state millions of dollars annually. The CEC emphasizes that because of the catastrophes at Chernobyl and Fukushima, no individual should be so deluded as to believe that nuclear energy is both clean and safe. The CEC applauds the efforts of Governor Cuomo and Attorney General Schneiderman have in trying to close the Indian Point nuclear reactors because of the dangers they pose to millions of people. However, this policy represents an extraordinary dichotomy in state public policy whereby Indian Point reactors should be closed immediately while older nuclear reactors and in Rochester and Syracuse should receive unlimited financial support, possibly billions of dollars. CEC points out that in none of the papers or policies produced since the launch of REV or of the Draft Energy Plan announced or discussed any plan for providing subsidies for New York's nuclear reactors. Further, none of the Energy Plan work finalized in June 2015 developed the analyses necessary to support massive subsidies for the nuclear industry.

The CEC argues that the DPS' low-income programs does not have sufficient funds to run their programs but now the state has billions to support nuclear companies. The CEC reminds the Commission that FERC recently blocked power purchase agreements approved by the Public Utilities Commission of Ohio for nuclear and coal plants that would have involved guaranteed above-market rates so it is unlikely FERC is to support subsidies for two nuclear companies in New York. The CEC asserts that the climate goal is supposed to reflect total greenhouse gas emissions, not just carbon emissions. Unfortunately the state has been paying

most attention to RGGI CO_2. Failing to address these considerable problems will lead us ultimately to failure to achieve our climate change goals—an unacceptable outcome. The CEC sees several key components missing is the CES proposal: an early and aggressive commitment to offshore wind in New York, a commitment to energy efficiency targets, and increasing energy storage. Despite a state record of failing to meet renewable goals the state is backloading progress toward late in the period between now and 2030. The CEC supports an early and ambitious goal for clean renewables to allow for increased electrification in transportation and home heating in the future. In addition, the CEC objects to the inclusion of biomass as a renewable resource.

Citizens for Local Power (CLP)

Initial

CLP encourages the Commission to focus on three areas: 1) off-shore wind resources; 2) ramp up investments in energy efficiency; and 3) promote widespread deployment of distributed renewable resources (DRG). CLP strongly believes that nuclear power does not have any place in a standard whose stated purpose is to ensure compliance with the 50 by 30 renewable target. CLP generally agree with the main CES design elements recommended by Staff and believe are appropriate and reasonable. However, CLP is concerned that that Community Choice Aggregation programs would not be allowed to fulfill a local goal of meeting 100% of electricity needs through renewable energy.

CLP strongly recommends that the Commission develop binding and enforceable energy efficiency targets, including a target specifically for LMI low to moderate households. CLP urges the Commission to support Clean Energy Organizations Collaborative (CEOC) recommendations regarding an off-shore wind tier. CLP is pleased that DRG owners can benefit from the CES, but remain concerned that it will create a market bias toward LSR. Therefore, CLP suggests that the Commission include a DRG carve-out for utilities to ensure a minimum level of community renewable development. CLP is against allowing utilities to own large-scale renewable generation because of the anti-competitive advantages that utilities would have in the market, and the creation of a utility bias against community-owned projects that compete with their own investments. Finally, CLP believes CCA can play a valuable role in helping New York meet and exceed the CES, particularly if communities commit to higher levels of investment in renewable energy than the state standard requires.

City of New York (City)

Initial

The City of New York (City) respectfully requests the Commission formally adopt the CES subject to modifications. The City supports equal emphasis on energy efficiency and adopt energy efficiency targets either as part of the Clean Energy Standard, or adopt a new version of EEPS, with funding provided via the Clean Energy Fund and existing utility energy efficiency programs. The City believes that energy efficiency measures could should reduce the need for new transmission or distribution infrastructure and energy efficiency investments could lower the cost of renewable resources. The City argues that a LSE should not be obligated to purchases ZECs or Tier 1 or 2 resources if it can meet all its CES obligation with new Tier 1 resources. The City believes the Commission should not require any consumer or LSE to reduce its purchase of renewable energy or alter the type or quantity of renewable energy it purchases solely to comply with the Clean Energy Standard.

The City emphasizes that more information and analysis are needed to ascertain whether the targets included in the White Paper are reasonable and achievable, and adopt the targets on a preliminary basis. The City supports the Green Bank to directly support CES goals in using capital to help deploy new, cost-effective, renewable energy projects in New York and transmission projects associated with renewable energy projects. The City believes the geographic equity must be addressed. The City requests the Commission impose a geographically-based sub tier to Tier 1 requiring some level of investment in downstate renewable resources, and maintain the longstanding in-City generation requirement for reliability purposes. The City generally supports the concept of Tier 3 and providing support for nuclear facilities that cannot fully recover their operating costs in the wholesale markets, however, the same considerations should be given to Indian Point Energy Center. The City recommends the CES provide targets through 2030 for future planning and development purposes. The City recommends that the ACP be reviewed every three years and the funds collected should be returned to consumers as credits on their electric bills.

Clean Energy Organizations Collaborative (CEOC) (Filing Jointly)
Acadia Center; Citizens for Local Power; Citizens Campaign for the Environment; Environmental Advocates of New York; National Wildlife Federation; Natural Resources Defense Council; Nature Conservancy; New York Public Interest Research Group; Pace Energy and Climate Center; and Sierra Club.

Initial

CEOC recommends that the ACPs must be set at rates reflective of best practices, and capped or periodically revalued over a multi-year horizon, every three to five years. The CEOC suggests the ACP funds should not be used for research purposes, and should instead be directed to either procuring renewable energy in furtherance of the 50% goal, or to fund programs that will directly reduce the costs of renewables development. CEOC supports the addition of an Offshore Wind Tier (OSW) in coordination with NYPA, LIPA and the New York Green Bank. CEOC stresses that OSW is the only large scale source (LSR) to produce electricity downstate to New York City and Long Island suburbs where and when the energy is needed the most.

CEOC advocates that the CES procurement should not be back-loaded, and provisional annual CES targets for all years of the program should be established now so as to provide clear market signals. The CEOC urges DPS Staff to examine front-loaded, equal, and back-loaded budget approaches that take into account both the importance of high early deployment as well as the costs of deferring environmental and societal benefits until later in the program. CEOC supports that the CES program should establish annual targets for each tier for the period 2017 – 2030, and the parameters for how the targets will be adjusted should be more fully articulated.

According to CEOC, the CES Order should include separate, robust long-term contracting requirements that are entirely severable from the obligation to procure RECs, with program targets set in a manner such that the two sets of targets are compatible with one another. CEOC believes that the predominant part of the CES target must be met by in-State LSR. CEOC supports Staff’s proposed requirement that EDCs must procure an appropriate percentage of the REC target through long-term contracts with renewable generators. CEOC recommends that the Commission encourage the EDCs, LIPA, and NYPA to coordinate an annual solicitation of PPAs. CEOC agrees with a structure that would allow EDCs to sell their excess RECs to other LSEs or to direct NYISO customers and support banking and borrowing. CEOC asks that the Commission provide clarity on NYSERDA’s role in procuring RECs and in facilitating long-term contracts. CEOC suggests the NYSERDA should help facilitate such procurement by the State’s EDCs. CEOC encourages the Commission to establish a binding and enforceable energy efficiency target to complement the CES.

CEOC recognizes that the Commission must carefully consider the treatment of load caused by electric vehicles, heat pumps,

and other net emissions reducing technologies under the CES, including appropriately forecasting the anticipated increased development of these resources into CES load projections, and creating utility incentives to support the adoption of these technologies.

Any draft implementation plans associated with the CES, CEOC states must be subject to public review and comment. CEOC comments that nuclear energy subsidies suggested in the White Paper must not hinder New York from meeting 50% of its electricity demand from renewable sources by 2030 and if the Commission is committed to supporting uneconomic nuclear facilities, it should do so through a program that is entirely separate and distinct from the CES. CEOC believes that the roles of LIPA and NYPA, as non-jurisdictional entities whose contributions to the Clean Energy Standard's goals are essential, should be more explicitly specified. Finally, CEOC asks the Commission that development of renewables infrastructure is not without environmental impacts that necessarily must be considered and can pose significant barriers to projects.

Reply

According to CEOC's reply comments, majority of commenters support the Clean Energy Standard's basic targets and proposed program structure, demonstrating there is no reason to delay a June Order implementing the CES's basic policy framework. The CEOC notes that commenters, even those who do not support the CES, widely support the role of energy efficiency in cost-effectively meeting the Clean Energy Standard target. CEOC reiterates its supports for a separate tier for offshore wind (OSW) and believes that an OSW tier would also promote locational diversity for the CES by developing large-scale renewable resources near New York City and Long Island.

CEOC argues that the REC-only approach is not adequate to drive achievement of the Clean Energy Standard's goals and strongly supports a long-term PPA requirement, to be implemented without delay, and remains open to consideration of procurement through utility-owned generation. CEOC refutes the Joint Utilities claim the customers are at risk of "overpayment" of the PPA should the electricity prices be lower than anticipated, by stating that customers are at a reduced risk by the more stable prices that are not subject to volatile market swings. CEOC suggests there may be a potential role for utility owned generation (UOG), complementary to a robust PPA market, to the extent they benefit customers and achieve clean energy goals. CEOC suggests that out of an abundance of caution, the

Commission may wish to design the long-term PPA mandate included within the Clean Energy Standard in a manner that will minimize the possibility of any misinterpretation in regard the *Hughes v. Talen Energy Marketing* decision.

CEOC maintains its supports that Alternative Compliance Payments (ACPs) should be used for actual renewable procurement or to fund programs that directly reduce the costs of renewables development and recommends ACP be set at a level high enough to stimulate REC procurement, while simultaneously guarding against price spikes. Most importantly, CEOC ACPs should only be used during scarcity conditions, incentivizing Load Serving Entities (LSEs) to maximize actual renewable procurement, rather than using the ACP as the primary vehicle for CES compliance. CEOC argues that, if carbon reductions is a central motivation for the CES, the program should include clear metrics going forward by resource type. Finally, CEOC emphasizes that the Commission needs to ensure the state's public power authorities contribute appropriately to the CES target, and that their programmatic pathways are being implemented across the rest of the state.

Community Energy, Inc. (CEI)

Initial

CEI enthusiastically supports New York State's pursuit of a new Clean Energy Standard (CES) to achieve 50% renewable energy by 2030 as a replacement for the RPS program. CEI believes that utility-scale transmission-level solar must play an important role in meeting the goals of the CES because the transmission system cannot handle 3 GW of solar power in projects sized at 5 MW and below. Utility-scale transmission-level solar brings important benefits to New York State, because solar power operates in concentrated geographic areas, providing greater local benefits in terms of tax revenues and lease payments to landowners. CEI emphasizes to the Commission that solar power will require a deployment mechanism to ensure that New York does not significantly delay the deployment of utility-scale solar or miss out altogether on its critical grid and economic benefits. CEI notes that solar power at scale is cheaper than offshore wind and significantly less risky. CEI supports long-term contracts as an effective and inexpensive mechanism for financing utility-scale solar power in New York. CEI enthusiastically supports the use of long-term bundled Power Purchase Agreements as a tool to achieve the goals of the CES.

Constellation Energy Nuclear Group, LLC (CENG)

Initial

CENG recommends two changes to the CES eligibility criteria: eliminate the need to demonstrate financial distress and limit eligibility to nuclear facilities that are physically capable of delivering their energy and capacity into New York. CENG agrees with the approach that all LSEs should be required to meet the CES mandates and that the ACPs, with NYSERDA acting as the backstop procurement entity are essential. In addition, CENG supports that NYSERDA should conduct a centralized backstop procurement within 60 days of Commission approval of the program. CENG emphasizes that it is important that the risks (operational and market) associated with operating nuclear facilities be included in the costs because there is no true up to recover those costs.

CENG strongly supports that the Commission eliminate the quantity phase-in and allow all qualifying facilities to sell ZECs at the ACP beginning April 1, 2017 since the Nine Mile facility is projected to lose significant revenue 2016. CENG argues NYSERDA should enter into 12 year contracts for ZECs to provide sufficient commitment needed by the generating facilities and its customers. According to CENG, these contracts would help provide the bridge to achievement of New York's emission goals. Finally, CENG believes that the nuclear tier (Tier 3) is the most cost-effective element of the CES in achieving carbon abatement, providing 75% of the carbon-free emissions in the early years of the program. The non-economic value the nuclear plants bring the state, outweigh the costs of the programs according the CENG.

Reply

CENG notes that several commenters agreed that preserving existing nuclear power is one of the most cost-effective mechanisms for achieving New York's emissions-reductions goals, and recognized the extreme threat to the climate should the plants be shut down. A few commenters, such as NYSEG and RG&G agree with CENG's initial comments that ZECs be obtained through a centralized procurement in which the ZEC price is set administratively. CENG proposes a ZEC pricing mechanism where facilities projected to turn a profit in the coming year will receive no ZEC payments, because those facilities will presumably continue their operations and facilities that are projected to incur a loss in the coming year will receive ZEC payments—but only enough to ensure that those facilities will continue to produce zero-emissions generation.

CENG supports a backstop pricing mechanism in which the value of a zero emission credit (ZEC) would be tied to the social cost of carbon, as the Institute for Public Integrity proposed. CENG believes that Nucor Steel Auburn, Inc., and the National Energy Marketers Association concern is misplaced, about the nuclear tier pricing mechanism may run afoul of the Supreme Court's recent decision in *Hughes v. Talen Energy Marketing*.

CENG argues that the nuclear tier program is not intended to give facility owners a guaranteed rate of return or to transfer risk from facility owners to customers, it is an environmental program intended to compensate nuclear facilities for their zero-emissions environmental attribute. CENG refutes Multiple Intervenors argument that clawback approach is inconsistent with the logic program.

Consumer Power Advocates (CPA)

Initial

CPA continues to support the Commission's efforts to develop a stable and self-sustaining renewable resources industry. CPA believes a properly structured utility scale renewable program has the potential to improve air quality, reduce greenhouse gas production and stabilize energy prices. CPA suggests because of the continually falling cost of renewable resources, LSR PPAs would subject utilities and their ratepayers to that risk. CPA supports utility-owned generation (UOG) and because of the capital intensive nature of renewable resources, Staff's dismissal of UOG is disappointing. CPA objects to Staff's concerns about market power and long term economic efficiency. According to the CPA, electric distribution companies (EDCs) could only exercise market power by withholding resources, a strategy that violates NYISO rules. In the case of LSRs, CPA believes PPAs will be even more risky because, just in the case of the earlier PPAs, the value of LSR energy will be determined by future fuel and energy prices, but the cost of new LSR will almost certainly decline as the technology improves. CPA continues to add that equivalent PPAs executed in the future and may lead to controversy and claims for relief from older, more costly contracts. Finally, CPA notes that the use of UOG to meet renewable energy goals need not prevent the development of third party LSRs as some EDCs may choose to meet that requirement by entering into a PPA.

Cornell University—Biological and Environmental Engineering—College of Agriculture and Life Sciences

Initial

Cornell University believes that as tier 1 is developed manure based AD needs to be included. Although most manure based AD systems will be relatively small, Cornell suggests measures must be instituted in the tiers to allow manure based ADs (in aggregate or individually) to market bundled renewable energy packages to participate in both tier 1 and 2 within a utility service area. Cornell supports the addition of manure based AD in tier 2 because there will be a number of existing digesters that have already contracted their renewable energy credits (RECs), and are contractually assigned to NYSERDA throughout the "useful life" of the manure based AD project. Cornell believes the useful life is not well defined and that should not preclude their participation in the Clean Energy Standard. Cornell argues both tier 1 and tier 2 should allow a voluntary premium to provide a "market pull" from consumers willing to pay a premium for "cow power" due to the significant environmental attributes from this form of renewable energy. Cornell states that it has been successful market demand in Vermont.

Reply

Cornell University agrees with the New York State DEC letter on the above referenced case dated April 22, 2016 with specific attention to the last heading "Biomass and Biogas Fuels" on page 3, and also agree with the statement made that says "...some biomass fuels are more carbon intensive than others, ...". Cornell's our opinion is that the context of this statement (and letter) by DEC was specifically for biomass combustion and not for biogas harvested from manure-based anaerobic digestion gas (ADG) systems used as a fossil fuel replacement source. Further, Cornell offers to the Commission that the use of dairy manure-derived biogas (including biogas jointly derived from co-digestion of organic substrates) results in a NET reduction in greenhouse gas (GHG) emissions. Cornell expresses support for the development of the LMP+D+E model and agree that it is essential to establish an interim process that recognizes the value of certain environmental attributes and paves the way for a more permanent formula such as LMP+D+E. Cornell argues that if ADGs are not incentivized, this would create an increased economic and environmental cost to rural upstate communities through, in part, continued reliance upon fossil fuel generation and stress on the major rural upstate NY industry.

Council on Intelligent Energy & Conservation Policy (CIECP) and Promoting Health and Sustainable Energy (PHASE)

Initial

CIECP and PHASE (CIECP) believe nuclear should not continue to be supported by the taxpayers and ratepayers because the technology is dangerous, risky, and threatening to the life and wellbeing of millions of New Yorkers. CIECP does not support nuclear power as a zero-carbon form of energy because it is a highly polluting form of power, producing prodigious amounts of long-lived radioactive waste, heat and greenhouse gases throughout its entire full fuel cycle. CIECP explains that the aging problem-plagued Indian Point site has had a long series of leaks into the groundwater, its site soil, and Hudson River and between November 2015 and February 2016, two new tritium leaks were discovered. CIECP states that Indian Point is the State's largest industrial water user, heating the Hudson River water and killing at least a billion fish, fish eggs and other organisms each year, including endangered fish species.

According to CIECP, nuclear reactors are poorly suited for operation in a warming client because they become less reliant and efficient from an energy generation standpoint, and far more dangerous. CEICP suggests that strong heavy precipitation and wide temperature swings in the region will likely take a further toll on all of the states aging plants, accelerating corrosion and rusting in buried pipes and cables. CEICP would like the Commission to conduct a proper analysis of the totality of nuclear power's effects on water and the threat they pose to water security throughout the nation. Finally, CEICP states that is crucial to send a strong signal to the energy markets that New York will no longer shackle itself to nuclear plants.

Reply

CEICP and PHASE urges the Commission to rethink its planning and policy of the CES to find a way to vigorously propel transition a new clean energy economy in a manner that does not cause undue harm to individuals and entities tightly linked to the old dirty energy economy. CEICP believes a New York energy vision must incorporate the following goals and values but not limited to: sustainability, efficiency, consumer choice, flexibility, innovative ideas and technologies, and transparency.

Deepwater Wind

Initial

Deepwater Wind joins with Alliance for Clean Energy New York (ACE NY) and other clean energy industry associations in

enthusiastically supporting the CES's goal of achieving 50 by 2030. Deepwater Wind concurs with the position of ACE NY that the development of offshore wind (OSW) in the Atlantic Ocean is critical for the state of New York to achieve its goal of 50% clean energy by 2030. Deepwater Wind argues that OSW has become a mature technology and New York has an abundant and valuable offshore wind resource. Deepwater Wind suggests offshore wind can help to avoid building new generation and/or transmission capacity costs by directly connecting into the downstate transmission system. Deepwater Wind believes that offshore wind power can help to bring geographic balance to the CES program and ensure that downstate ratepayers receive the same benefits of reduced emissions and economic development that the rest of the state has received for many years.

Deepwater Wind supports the Whitepaper's recommendation that the CES be applicable to all Load Serving Entities (LSE's) subject to the PSC's jurisdiction, as well as non-jurisdictional LSE's, especially the Long Island Power Authority, and its service provider (LIPA). Deepwater Wind cautions that relying on a voluntary commitment alone risks missing the goals of the CES. Deepwater Wind supports EDC procurement via long-term bundled REC and PPAs because bundled PPA's allow project developers to attract a lower cost of capital, which translates into a lower price of energy for ratepayers. Deepwater Wind advocates for regularly-scheduled, predictable solicitations for new sources of renewable energy to develop a local supply chain. Deepwater Wind requests that the model described in Appendix A.1 of the Cost Study be made public so the PSC can both solicit feedback on the appropriate means of evaluating proposals and choosing between technologies, and allow developers and technology provider to better understand the target prices they need to achieve in order to secure a PPA. Deepwater Wind does not agree with Staff's assumptions regarding offshore wind costs and asks that they be revisited. Deepwater Wind recommends that the CES Program provide explicit support for the development of offshore wind. Finally, Deepwater Wind favors a CES Program that includes guidelines for evaluating proposed projects that require the consideration of all costs and benefits to ratepayers so selection of projects and technologies may result in a better overall value for ratepayers than if the selection was based solely on the cost of the proposed contract alone.

Direct Energy Services

Initial

Direct Energy Services (Direct) Supports Commission's goal of achieving cleaner emissions but should be through existing

competitive market structures which are more transparent and efficient in manner. Direct is concerned that the Commission will proposes mechanisms that could undermine efficient market outcomes or not produced desired results and customers will bear the costs. Direct believes that significant changes to regulatory environments are best absorbed by the overall market and stakeholders when applied prospectively, and do not undermine pre-existing contracts. Direct supports a phased-in ACP schedule whereby the ACP is set very low in the early years and gradually increases in order for LSE's to account for future costs and avoid harm to customers under fixed price or multi-years transactions.

Direct strongly advocates for the inclusion of banking and borrowing in the CES implementation plan because it allows the LSEs to manage their REC portfolio in a rational way that translates into lower prices for customers. Direct opposes Staff's recommendation to require all LSEs to acquire Zero Emissions Credits ("ZECs") from nuclear power plants is contrary to the spirit of the robust and mature competitive market and it places more value on one technology over another. Direct continues to say that it opposes the purchase of ZECs because it excludes energy efficiency, which is even more "zero" carbon than nuclear. Finally, the Commission should reject Staff's recommendation to permit utility ownership of renewable energy sources or distributed generation and be wary of proposals to include long term PPAs, which can negatively impact the hard fought for efficiencies which currently exist in the wholesale energy market.

DONG Energy Wind Power U.S., Inc. (DONG Energy)

Initial

DONG Energy supports New York's ambitious goals to reach 50% renewable generation by 2030, and believes offshore is a critical component. DONG Energy argues that offshore wind is the only large-scale renewable resource that can be applied close to the load center of New York City. DONG Energy supports long-term contracts as key for large renewable development, specifically offshore wind. DONG Energy agrees that a single tier approach to new renewable energy is a very cost efficient way of incentivizing new renewable build out. However, DONG Energy warns that by allowing out of state resources to be eligible for compliance on equal terms with in-state resources, there is a real risk of incentivizing and financing out of state projects. In addition, DONG Energy states that Tier 1 projects will be evaluated based on a too simple metric (costs per MWh), and each technology's benefit will not be taken into account, such as

offshore wind's proximity to load or demand. Finally, DONG Energy encourages the Commission to further to investigate mechanisms that can ensure cost efficiency specific tier.

Dutchess County Legislature

Initial

The Dutchess County Legislature strongly supports Tier 1 and Tier 2 of the Clean Energy Standard but strongly opposes the inclusion of subsidies for aging, unsafe and economically unsustainable nuclear reactors as proposed in Tier 3. The Dutchess County Legislature believes Tier 3 subsidies contradict a very important founding principle of Reforming the Energy Vision which is allowing the marketplace to work.

The Dutchess County Legislature stresses that nuclear energy is NOT clean or carbon-free and dramatic declines in local infant death and childhood cancer rates occurred soon after the closing of eight nuclear power plants according to a recent study. The study documents a 17.4% reduction in infant mortality in the downwind counties within 40 miles two years after reactor closing, compared to a national decline of just 6.4%. The Dutchess County Legislature advocates that the funds targeted for nuclear subsides would be much better invested truly in clean energy: wind, including offshore wind, hydro, tidal and community and utility scale solar, storage and energy efficiency.

EDP Renewables North America (EDPR)

Initial

EDPR expresses support for the ACE-NY comments and those of RENEW Northeast and commend as the detailed comments provide clear and in-depth input in this important process. EDPR sees a return to utility owned generation as shifting risk to customers and away from investors and favors a bundled REC/power contract as an effective way to get large scale renewable energy projects built. EDPR suggests that in the project selection process that in addition to the "Implied REC" approach described in the ACE-NY comments, it should include other values to such as economic development. Finally, EDPR urges the Commission to move this proceeding to a rapid completion and to progress with haste into implementation given the "ticking clock" of the Production Tax Credit phase-down.

Empire State Forest Products Association (ESFPA)

Initial

ESFPA urges the state to continue to include renewable biomass energy as component of the CES's energy portfolio because biomass energy has carbon benefits and as noted in the final Clean Power Plan released in August by the United States Environmental Protection Agency. ESFPA states that if biomass power facilities are no longer able to monetize the value of their renewable energy attributes in New York, these facilities are likely to terminate operations, which would lead to lost jobs, lost markets for low-value fiber, and forest degradation. Finally, ESFPA requests the Commission recognize these benefits as it develops the State's future renewable energy policy.

Energy Efficiency for All (EEA) (**Filing Jointly**) **Association for Energy Affordability; Center for Working Families; Enterprise Community Partners, Inc.; Green & Healthy Homes Initiative; Natural Resources Defense Council; Natural Resources Defense Council; Pace Energy and Climate Center; WE ACT for Environmental Justice**.

Initial

EEA urges the Commission to mandate two percent or higher of energy efficiency savings targets of annually. EEA suggests if there is a binding target it be coupled with an Earnings Incentives Mechanism (EIM) which would allow each utility to use its efficiency program to support activities and procurement to stimulate the efficiency marketplace. EEA wishes to reiterate its strong supports for energy efficiency investments in the low-income multifamily market.

EEA recommends that if Alternative Compliance Payments (ACP) are collected they should be directed to NYSERDA and deployed to support the 50 by 30 goal. ACP funds should not be used for customer rebates, research or broad market transformation programs. EEA argues the Clean Energy Advisory Council should take the need for an efficiency mandate as a given and act more expeditiously than the CEAC is likely to.

Energy Infrastructure Advocates, LLC (EIA)

Initial

EIA supports the Clean Energy Standard and believes that long-term power purchase agreements (PPA's) for bundled energy and REC's will encourage development of large-scale renewable resources and achieve the lowest cost for consumers of energy. EIA recognizes renewable power generation developers/owners will require long-term PPA's with investment grade rated

counterparties that have a strategic rationale for their involvement in the PPA and suggests the New York Power Authority (NYPA) would be the most logical Central Supply Aggregator (CSA) and PPA off-take counterparty given their credit rating and market position. EIA asserts that LSE's will not be willing to enter into long-term PPA's with renewable energy providers given their customer's ability to switch to other energy providers without meaningful cost or restrictions to change providers. EIA supports centralized procurement of renewables which will support competition amongst renewable projects and provide transparency in selecting the best renewable projects. Without creating an attractive investment environment for renewable project developers, EIA suggests NYS will not draw first tier quality renewable developers due to onerous permitting process, high cost of development and the relative quality of renewable resource versus more attractive environments, such as California.

In order to encourage renewable power suppliers to invest capital to meet the CES, EIA favors that the NYS Legislature should enact legislation authorizing the CES to provide confidence that PPA's will not be able to be undone by future administrative agency actions. EIA recommends a Central Procurement Agency (CPA) (e.g. NYSERDA) collaborate on an ongoing basis with LSE's to determine CES targets by year, including forward planning periods. Further, EIA suggests the CPA issues Request for Proposals (RFP's) for clean energy supply consistent with annual CES Targets and the CPA, NYISO and utilities collaborate to review reliability, resiliency and cost of responses to RFP's and rank projects according to criteria developed to address system and customer priorities (RFP Review Process). EIA emphasizes that LSE's have the option to opt-out of central procurement of renewables, and procure renewables directly, subject CES compliance. EIA proposes that LSE's have the option to commit to lock-in a percentage of their CES Target obligation, by entering into a firm contract with the CSA for the term of the LSE commitment period. EIA indicates that retail customers also have the option to commit to a long-term agreement for a percentage of their load (in standard block sizes). EIA asserts that CSAs will purchase renewables subject to PPAs. Finally, while EIA supports the concept of utilities having the opportunity to own renewable generation, non-utility ownership may prove more cost competitive for the customer, particularly in the initial years of the power supply being provided.

Energy Recovery Council (ERC)

Initial

ERC is disappointed that NYSERDA's New York Generation Tracking System (NYGATS) operating rules do not recognize waste-to-energy (WTE) type of technology as renewable. Especially given NYSERDA's recognition of other types of technologies that convert landfill gas to energy, ERC would have expected WTE technologies that process waste without creating methane to be recognized in NYGATS as well. ERC suggests that recovering energy from waste can both reduce methane emissions from waste management and recover energy from the recycled waste while helping the State meet it GHG reduction goals. In addition, ERC urges the Commission to maximize the provision of renewable incentives to both new and existing in-state renewable facilities to help the state grows its our green economy. If the 10 WTE facilities currently operating in New York are not able to monetize the value of their renewable energy attributes in New York, ERC is concerned that the long-term stability of these facilities may be uncertain. ERC argues the Commission should value the baseload quality of WTE power and ensure that its benefits are manifested in the power grid.

Reply

In its reply comments, ERC confirms its supports for that waste sources of biomass, are widely recognized as being practically carbon neutral as well as a significant potential tool to mitigate climate change when used for energy. According to ERC, the carbon benefits associated with the use of waste sources of biomass are also recognized by prominent academics, including the United States Environmental Protection Agency ("EPA"). ERC continues to believe that waste-to-energy technology can be a valuable resource in the State's efforts to meet its long-term renewable goals.

Entergy Nuclear Indian Point 2, LLC; Entergy Nuclear Indian Point 3, LLC; Entergy Nuclear FitzPatrick, LLC; and Entergy Nuclear Operations, Inc. (Entergy Entities)

Initial

Entergy Entities urge the Commission to reject DPS Staff's proposed administrative program in favor of implementing a State specific, market-based, fuel-neutral program to procure clean energy credits ("CECs") tied to the carbon intensity of a megawatt-hour ("MWh") of electricity by whatever existing or new technology is capable of and actually produces power with no or low, carbon emissions. Entergy Entities support an unbundled product with all generators eligible to generate CECs in inverse

proportion to the actual carbon intensity of the MWh they produce. Entergy Entities believe that the proposed Tier 3 structure must be modified for several reasons. Entergy Entities argue that the Staff's proposal to that facilities must show financial need to participate is arbitrary and unduly non-discriminatory. Under the Tier 2 structure, Entergy Entities notes that facilities do not have to show financial need for eligibility, and the facilities should be treated equally as the value of the product is the same. Entergy Entities disagrees with Staff's definition of "fully licensed" nuclear facility because it is contrary to federal law. According to the Nuclear Regulatory Commission's rules, Entergy Entities state that they have met the requirements of the timely renewal doctrine and the Indian Point units indisputably continue to operate under valid NRC licenses. Therefore, Entergy Entities emphasize that Indian Point is eligible to participate in Tier 3. Staff's proposal to limit fully licensed nuclear facilities, Entergy points out that it is contrary to the White Paper's statements regarding limiting emissions and supporting fuel diversity as much as possible through 2030. Indian Point provides substantial clean contribution to the state's clean energy goals and Entergy Entities requests that it be compensated. In addition, Entergy Entities stress the importance of Indian Point's zero emissions in the NYC region which is designated a non-attainment zone by the EPA.

Reply

Entergy Entities disagrees with the Alliance for a Green Economy (AGREE) to exclude the Indian Point facility from participating in the CES program and notes that the City of New York and Independent Power Producers of New York (IPPNY) state that DPS Staff's proposed CES "fully renewed license" eligibility requirement contravenes well-established federal law, is unduly discriminatory and lacks a rational basis, and thus, the Indian Point facility must be permitted to participate in the CES program. Entergy Entities support the City of New York and IPPNY's findings that echo their initial comments, establishing that DPS Staff had failed to provide a legitimate basis to support its proposal to include all of the Upstate nuclear facilities but exclude the Indian Point facility alone from the nuclear tier. Entergy Entities disagree with the comments advanced by AGREE and Council on Intelligent Energy & Conservation Policy (CIECP) that New York will have the necessary renewable resources to adjust to a rapid phase-out of nuclear power but still reach the 50 by 30 goal and that nuclear power is a highly polluting expensive form of energy generation. Entergy Entities argue that the positions advanced by AGREE and

CIECP fail to account for the substantial role that New York's nuclear facilities play in allowing the State to avoid massive amounts of carbon and other significant air emissions, a fact highlighted by many parties in this proceeding.

Entergy Entities agree with other commenters that it appears extremely unlikely that enough renewable resources could be added to the system by 2030 because of the highlighted additional transmission that may be required. Entergy Entities agree with many parties that recognize that “backsliding” on New York’s ambitious GHG emissions goals must be avoided and nuclear generation provides critical benefits. Entergy Entities support the CES program a program design that requires all entities participate on an equal footing without subsidization or the socialization of project costs from outside the program. Entergy Entities notes that some parties questioned whether certain aspects of the CES White Paper proposal were invalidated by the United States Supreme Court's recent Hughes decision, but Entergy Entities suggest that a non-discriminatory market-based structure that provides for clean energy service to be incorporated as a component of daily generator bids submitted to the NYISO would not intrude on the FERC's exclusive jurisdiction, and thus, it should be adopted.

Environmental Defense Fund (EDF)

Initial

EDF supports the Clean Energy Standard however, recommend that the near term goals must be complemented by intermediate and long term goals, which can and should be adjusted as we go. EDF believes that setting targets set for all years through 2030 provides certainty to investors and is particularly critical as applied to renewable energy projects with long development timelines. EDF advocates that clear targets and incentive structures are needed for energy efficiency and continued ratepayer support for utility energy efficiency programs. EDF recommends that the renewable programs should not hinder the electrification of building heating and transportation, simply because such electrification will increase the renewable energy procurement need. EDF proposes the Commission should work with other state agencies to develop strategies to mitigate any incentive to electric utilities by harnessing the value of carbon reductions occurring in sectors other than the electric sector. EDF suggests that although the whole orientation of the CES program is to incentivize renewable generation directly rather than burden emissions, that approach is a very imperfect substitute for a compelling price on carbon.

EDF agrees obligation should be shared among all electric users, but it also needs to be enforceable in the event of non-performance with some special considerations and tailoring if necessary. Placing the CES obligation on LSEs, EDF states has the benefit of embedding the cost of the obligation to procure renewable energy in the supply component of customers' bills. EDF agrees that nuclear power can contribute to the achievement of the State's carbon reduction goals, but it should do so under a program that is entirely separate and distinct from the CES, rather than include nuclear subsidies under the CES banner. Further, EDF strongly opposes the nuclear subsidy becoming permanent. EDF believes the Commission should start consider alternatives to nuclear subsidies such as demand response, voltage optimization, energy efficiency. In their comments, EDF recommends the CES should be designed with the distributed grid in mind, including distributed energy resources, in the accounting of both renewable generation and non-renewable generation. EDF believes that the significant investment in new renewable generation capacity should be structured in the most favorable possible manner for ratepayers and will require significantly more financial analysis of the options than has been undertaken thus far, and significantly greater transparency. In the absence of such a process at this time, EDF suggests that rather than commit to one course of action with insufficient data, the program promulgated in 2017 should include multiple approaches. EDF supports banking and borrowing but only for a limited duration, to encourage market liquidity and ensure continuing demand for renewable generation. According to EDF, ACPs should be set at a level that provides enough funding for these benefits to be purchased, and the funds should be used to achieve the purposes of the program through alternative channels.

Environmental Energy Alliance of New York (The Alliance)(Filing Jointly) Central Hudson; ConEd of New York; CCI Roseton; Dynegy Power LLC; PSE&G Long Island; National Grid; NYPA: NYS Electric & Gas Corp.; NRG Energy, Inc.; Orange & Rockland Utilities, Inc.; Rochester Gas & Electric Corp.; Selkirk Cogen; TransCanada; and US Power Generating Co.

Initial

The Alliance states that the White Paper should provide a more detailed description of the differences between the energy efficiency assumptions used in their analysis relative to the NYISO energy efficiency analyses. The Alliance notes that the incremental renewable energy goal depends on definitions of the fuel types and calculation of the totals. The Alliance believes

that the results should be consistent with “gold standard” of New York energy data, the NYSERDA Patterns and Trends report so that anyone can review progress and historical trends.

Environmental Entrepreneurs- NY Chapter (E2)

Initial

Environmental Entrepreneurs (E2) joins the Clean Energy Organizations Collaborative ("CEOC") in supporting the Clean Energy Standard. E2 supports several of CEOC’s comments such as requiring an enforceable renewable obligation on load-serving entities and mandating energy efficiency targets. E2 recommends an additional tier to the CES to secure offshore wind development. E2 advocates that annual targets for CES compliance should be set in a manner that does not back-load achievement of the 50 by 30 goals and the alternative compliance payment mechanism should be structured so as to ensure the CES goals are not compromised.

EnviTec Biogas USA

Initial

EnviTec Biogas USA advocates that the Commission give a full evaluation of the economic and environmental benefits from the utilization of anaerobic digesters because the quantitative and qualitative economic and environmental benefits from utilization of anaerobic digestion of animal manure and food wastes is evident. EnviTec Biogas USA believes that digesters serve a multitude of environmental benefits including but not limited to: greenhouse gas reduction, nutrient recovery, pathogen reduction, odor reduction, reduction in nutrient loading of our waterways and loading of our landfills with food wastes.

EtaGen, Inc. (EtaGen)

Initial

EtaGen does not support use of bundled power purchase agreements because they could effectively bar participation of valuable behind-the-meter distributed generation. EtaGen recommends the CES should be used to encourage the deployment clean energy technologies, such as high-efficiency linear generators, and not rely on the same existing RPS to determine technologies.

General Electric Company (GE)

Initial

GE recommends that enforceable CES interim targets be set all the way up to the 2030 target date, using a straight line approach with an allowance for adjustments of the compliance trajectory during the intended triennial reviews of the CES program. GE urges the Commission to reject front-loading of targets in an effort to maximize federal incentives while meeting the ultimate 2030 CES goal. GE supports the use of long term contracts, however they believe DER assets should have access to whichever long term contracts are deployed and the CES should not discriminate by project type or size. GE favors a gradual approach and begin with a lower percentage as a minimum requirement of the LSEs and use the triennial review as a mechanism for mid-course adjustments to the percentage of long term contracts. GE agrees that ACP levels should be established by the Commission based on forecasted CEC prices, system needs, and other relevant factors and agrees with Staff that the ACP schedule should be reviewed periodically and recommend that it be part of the triennial review. While GE supports the Staff's recommendation to include an extensive list of CES qualified technologies, GE suggests the eligible technologies in Appendix C serve as a starting point because the CES should serve to encourage and incent the development and commercialization of emerging clean energy technologies. GE advocates for a process approving additional technologies to be eligible for the CES which could be managed through NYSERDA and the Clean Energy Fund's new Investment Planning process. If a specialty tier is ultimately included in the CES, GE recommends that this be an open opportunity for emerging technologies that meet clear eligibility criteria. For example, GE suggests adding a New Emerging Technologies Tier eligible for higher value "ECECs" (Emerging Clean Energy Credits). GE recommends the inclusion of both banking and borrowing with the CES program and suggests a banking provision be limited to 3 years, and that borrowing be limited to 2 quarters and only allowable from operational projects. GE applauds New York for incorporating nuclear generation into the proposed Clean Energy Standard. GE urges the proposed triennial program assessment to include an evaluation of compliance, costs, energy diversity and ACP effectiveness. The assessment should be made available to all the stakeholders.

Grassroots Environmental Education (Grassroots)

Initial

Grassroots Environmental Education recommends the Clean Energy Standard should be consistent with the view of world

leaders at COP 21 recognizing the imperative of limiting global warming to 1.5 degrees Celsius cap instead of the 2 degrees goal. Grassroots supports the goal of 100% renewable energy by 2030 with annual targets and believes if the CES limits the goal to 50% renewable energy by 2030 it would not achieve a 1.5 degrees Celsius cap in limiting global warming. Grassroots states the state Energy Plan has not considered the critical greenhouse gas emissions from natural gas, which is 86 X more potent than carbon dioxide over a 20 year time frame according to the Intergovernmental Panel on Climate Change. Grassroots emphasizes nuclear energy is not clean and not renewable and should not be subsidized as part of the CES. Grassroots believes that energy efficiency should be an enforceable component of the CES with clearly defined and aggressive targets. The CES should include an offshore wind tier and New York should commit to support construction of 5,000 MW of offshore wind by 2025 and 10,000 MW by 2030, according to Grassroots. In addition, Grassroots urges the Commission to build in incentives for consumers large and small to participate in programs such as Demand Response programs.

Gravity Renewables

Initial

Gravity Renewables states that small hydros are a vital part of the existing baseline, while providing regional economic development through creating jobs, strengthening the tax base and promoting spending. Gravity Renewables point out that small hydros are facing economic challenges due to the current market prices, and the current market mechanisms to support small hydro are either ending or existing mechanisms of administrative procedures and competitive procurements are not compatible. Gravity Renewables object to Staff’s opinion that existing small hydro projects in New York are somehow not eligible for other REC programs. Gravity Renewables argue that a number of neighboring states recognize the value of these existing resources and have provided pathways for New York small hydro owners to seek value in those markets. Gravity Renewables encourage Staff to recognize that small hydro is not only deserving of strong support given its numerous contributions to the state but that without such strong support the state will be coopted by New York’s neighbors for their environmental goals. Gravity Renewables urge DPS to consider a long-term, fixed price REC offering that appropriately values the positive externalities of a given renewable energy resource. Gravity Renewables recommend that New York should establish market-based, not administrative, support mechanisms for all existing

renewable energy facilities, including small hydro. The Clean Energy Standard should establish a single tier for existing facilities standard which includes a long-term, fixed price for RECs and continued or expanded flexibility for remote net metering.

Greater Oswego-Fulton Chamber of Commerce

Initial

The Greater Oswego-Fulton Chamber of Commerce strongly supports the CES and the nuclear power plants. They believe that the facilities are vital to the State and provide tremendous economic and reliable energy benefits to New York families and communities.

Green Education and Legal Fund (GELF)

Initial

The Green Education Legal Fund (GELF) advocates that the CES be amended to support 100% renewable energy by 2030 and urges the adoption of annual goals for the development of renewable energy through 2030. GELF recommends the CES establish yearly targets for utilities and public energy authorities to purchase renewable energy annually. GELF suggests the CES should be enforced through Alternative Compliance Payments and that money should then be used by the state to invest in renewable energy. According to the GELF, the CES should include an offshore wind tier to demonstrate a long-term, large-scale commitment by the state. GELF also recommends the CES include energy efficiency targets, and the CES should apply to all utilities and power authorities, as well as other electricity suppliers.

GELF believes that under no circumstances should nuclear energy be counted toward the State's renewable energy requirement, nor should any funds for renewable energy be diverted to support New York's failing nuclear plants. GELF asserts that the CES should not be a route to merely importing renewable energy from other states, but should lead to economic development within our state.

GELF supports carve-outs or co-incentives for locally and community-owned renewables. GELF favors the enactment of a State carbon tax to reflect the true economic, health and environmental costs associated with carbon, and believes that a carbon tax is the most efficient means to instill crucial price signals that spur carbon-reducing investment.

GreningUSA, Inc.

Initial

GreeningUSA strongly supports Tier 1 and Tier 2 Renewable Energy Credits (RECs). However, strongly oppose the inclusion of subsidies for aging, unsafe, and economically unsustainable nuclear reactors as proposed in Tier 3. GreeningUSA believes that nuclear power is not renewable or clean because the entire fuel cycle poisons mining communities, contributes greenhouse gas emissions, releases radiation into the environment, and creates high-level radioactive waste. Greening USA states that subsidizing nuclear power will increase these very serious environmental and public health risks to communities in New York and across the United States. GreeningUSA argues that it is irresponsible to make ratepayers bail out unprofitable nuclear reactors. Greening USA states that the Department of Public Service should publically release its calculations and methodology, which believes that the Department has so far refused to do.

GreeningUSA believes that it is wrong to require ratepayer bail-out of nuclear reactors. GreeningUSA recognizes that plant closures will impact host communities in Oswego and Wayne Counties, but massive consumer bailouts of these facilities is not the answer. GreeningUSA urge the Commission and the Governor to support communities through the transition to a green economy, this can include nuclear decommissioning jobs, transitional support for municipalities and school districts, and the creation of green manufacturing in Upstate New York.

Hudson River Sloop Clearwater, Inc.

Initial

Hudson River Sloop Clearwater believes that nuclear power is not clean energy and should not be included in New York's Clean Energy Standard (CES). Hudson River Sloop Clearwater strongly applauds Tier 1 and Tier 2 of the proposed CES, which will ensure that utilities and other energy companies purchase new and existing renewable energy resources. However, Hudson River Sloop Clearwater strongly opposes to the inclusion of subsidies for aging nuclear reactors as proposed in Tier 3 of the CES. The Commission's rationale for including the Tier 3 nuclear subsidies is the unsupported assumption that New York cannot meet its 2030 greenhouse-gas reduction goals if the financially-unsustainable upstate nuclear plants are allowed to close. Hudson River Sloop Clearwater states that this contradicts many analyses done by scientists showing that we can meet aggressive

greenhouse gas reduction targets while closing nuclear reactors at the same time.

Hudson River Sloop Clearwater states that it is true that nuclear reactors do not emit carbon dioxide at the point of power generation, but the nuclear fuel chain is responsible for carbon emissions during mining, milling, enriching, construction, transportation, and decommissioning. The nuclear life cycle is extremely dangerous to human health. Hudson River Sloop Clearwater believes that subsidizing nuclear power will increase the amount of highly radioactive fuel rods that each host community will have to store over time and that ratepayers will pay to maintain, if the plants owner's decommissioning funds are insufficient, which is commonly the case. Hudson River Sloop Clearwater believes that these additional costs have not been considered in the CES cost analysis.

According to the Hudson River Sloop Clearwater, under Tier 3 of the proposed CES, by 2020, nuclear power would become the most heavily subsidized energy source in New York, a cost that would have to be paid by ratepayers. The Nuclear Information and Resource Service projects that these subsidies will cost approximately $3.5 billion (based on losses reported at some of the reactors).

Hudson River Sloop Clearwater notes that Tier 3 does not currently apply directly to Indian Point, since – until recently – it has been fiscally profitable; Tier 3 only applies to the reactors in the western part of the State, which need a subsidy to operate profitably. Entergy is appealing the exclusion of Indian Point from Tier-3 payments and has said that it fully expects to be subsidized through the CES. This means that ratepayers could be forced to pay for any major costs required to keep nuclear plants afloat. In the case of Indian Point that might well entail a major overhaul of the reactors, which the recent discovery of large numbers of missing, broken and degraded bolts in the reactor is symptomatic of, or the construction of closed-cycle cooling, or to pay for losses that occur during mandatory outages that may be required to protect Hudson River fish.

Hudson River Sloop Clearwater supports off-shore wind, and believes that NY's enormous offshore wind potential has great promise to help New York meet its goal of 50 percent renewable energy generation by 2030 and to power the greater NYC metropolitan area. NYSERDA has already completed a well-researched environmental impact study of the potential impacts of off-shore wind on the marine ecology and has given this technology a clear green light. The cancellation of the proposed liquid natural gas

export facility at Port Ambrose removed an important obstacle. Hudson River Sloop Clearwater believes that the CES Tier 3 should be dedicated to accelerating the development of off-shore wind, not to subsidizing nuclear power. Hudson River Sloop Clearwater states that the CES proposal assumes a very modest decrease in electricity demand due to energy efficiency, but does not mandate that utilities invest in energy efficiency retrofits. Energy efficiency is a key component of a low-carbon energy future. Hudson River Sloop Clearwater believes that energy efficiency is the most affordable way to reduce greenhouse gas emissions and displace fossil fuel and nuclear generators.

Hudson River Sloop Clearwater supports Tier 1 and Tier 2 Renewable Energy Credits (RECs) and strongly opposes Tier 3 subsidies, the "Zero Emission Credits" (ZECs) for nuclear power, which is not emission-free, cost-effective or safe for human health and the environment.

Hydro Quebec Energy Services (U.S.) Inc. (HQUS)

Initial

Hydro Quebec Energy Services (HQUS) believes the CES eligibility standard for hydro should be expanded to include all low carbon hydro facilities (including storage resources), and not limited to low-impact run-of-river facilities and upgrades to existing resources with no new storage impoundments. HQUS notes that hydropower developed in Quebec has a GHG emission profile similar to wind and less than PV solar on lifecycle basis. HQUS argues that hydro resources from Quebec delivered over existing transmission lines should be considered as Tier 2A resources and renewable generation delivered over new transmission, should be eligible to compete in Tier 1 long-term contract solicitations.

Since the NYGATS draft operating rules state that only renewable energy resources located in a control area with a Compatible Certificate Tracking system will be eligible to create Unit-Specific Certificates, HQUS states it is prevented from participating in the CES. HQUS suggests alternative approaches should be considered to track renewable resources from external control areas, as Quebec does not have a Compatible Certificate Tracking system. HQUS notes that an alternative approach has been adopted in the New England system, which operates in a similar manner as NYGATS.

Reply

Hydro Quebec Energy Services (HQUS) argues against IPPNY's comments on the CES Whitepaper that government-owned projects,

or projects whose costs are socialized, should not be eligible to participate in the CES program. While it is true that HQUS is wholly owned by the Quebec government, HQUS does not receive subsidies from the provincial or federal government. Therefore, HQUS believes that the ownership of HQUS and its affiliated companies should not be a factor in the eligibility of CES; rather, eligibility should remain based on environmental criteria. In addition, HQUS refute the claims made by IPPNY and the Renewable Energy Industry that the environmental benefits of large scale hydro resources and that the environmental characteristics of large-scale hydro resources in Quebec are not consistent with New York's goals outlined in the CES. HQUS argues that their hydro facilities are among the lowest CO2 emitting generation technologies and are both cost effective and able to offer significant volumes of energy to assist New York in meeting near term and future clean energy objectives. HQ believes the inclusion of large-scale hydro can immediately contribute significant volumes of renewable energy in New York, and will be an important piece of New York's clean energy portfolio.

Independent Power Producers of New York, Inc. (IPPNY)

Initial

Independent Power Producers of New York (IPPNY) urges the Commission to adopt Staff's proposal that retail load serving entities ("LSEs") be required to supply a defined percentage of their retail loads with supply generated by new and existing renewable resources. IPPNY also supports Staff's recommendation that the Commission perform triennial reviews to determine future targets and necessary adjustments to the ACP cap to reflect changing market conditions. IPPNY believes that the Commission should be consistent with the value it places on carbon reductions by incorporating a market-based approach that internalizes the cost of carbon and other emission allowances in wholesale energy prices and allows zero and low emission resources consistent with the SEP's goals. IPPNY further encourages the Commission to recognize the importance of pursuing cost-effective opportunities for carbon reductions in other sectors of the economy (*e.g.*, transportation and buildings), many of which may prove to be lower cost, more effective, and less prone to unintended, negative consequences than overreliance on carbon reductions from the electric power sector. If out-of-State renewable resources are eligible to participate, IPPNY urges the Commission to clarify that out-of-State resources owned or supported, directly or indirectly, by government entities are not eligible. IPPNY advocates that

should the Commission adopt a payment stream to nuclear facilities for the value of their zero carbon emission electric generation, the Commission should provide for the eligibility of all operating nuclear facilities because the value of zero emission credits ("ZEC") to stabilize current carbon emissions is the same whether or not a facility is financially distressed or has completed its license renewal proceeding.

The Commission should reject Staff's proposal that EDCs be required to enter into long term PPAs. IPPNY supports Staff's proposal that NYSERDA continue its solicitations for contracts to purchase RECs because this approach has the least impact on the competitive wholesale market, assuming that the contracts are for RECs at a fixed price and they align with a CES program. IPPNY recommends the Commission continue to prohibit EDCs from owning any generation facilities in New York State, including LSRs, to guard against the exercise of Vertical Market Power so long as private investors are willing and able to develop projects in New York. IPPNY rejects Staff's proposal that EDCs be permitted to invest in renewable projects in partnership with private developers is unclear as to whether EDCs would take an ownership role. IPPNY suggests the Commission should not make a decision on the proposals included in the White Paper until the State Resource Planning Study ("SRP Study") that is being conducted jointly by the NYISO.

Reply

IPPNY disagrees with the Joint Utilities (JU) "Universal Renewables" model of UOG because the Universal Renewables model because a private developer would only shoulder the risks of constructing a particular assets and that asset would then be transferred to a utility where ratepayers would also inherit other risks associated with ownership. If the Commission were to adopt the JU's proposal, IPPNY argues it would create a perverse incentive for utility owners to underbid their projects and recover any cost overruns through rates after those projects have already been selected. Whereas merchant developers must fully assess all potential risks and live with the bids they have made, utility owned projects can always fall back on ratepayers. IPPNY states that the JU argue there are numerous "tax benefits" of utility-owned solar, but is short on specifics. IPPNY suggests preventing UOG ensures that utilities cannot exercise VMP to the detriment of competitive markets and consumers. IPPNY reiterated its opposition to mandating long-term, bundled PPAs as a component of LSRs from conducting their operations consistent with competitive market price signals and harm the wholesale competitive electricity market. IPPNY

indicates that other commenters, including the NYISO, the Joint Utilities and NYPA, offered similar comments on bundled PPAs. IPPNY opposes both HQUS, and TDI's comments in support for the eligibility of large-scale hydro for New York's CES. IPPNY strongly recommends the Commission should reject this expansion of New York's CES eligibility and maintain the scope of existing definition for "hydroelectric" adopted for the RPS in 2004. IPPNY states the expansion of eligibility would account for the significant environmental impact of new impoundment, the considerable carbon footprint of large-scale projects, or the substantial environmental impacts associated with the construction of transmission lines running down from Canada through New York's major water bodies. IPPNY has consistently opposed the Commission adopting policies that would force New York State ratepayers to subsidize the Canadian government's construction of hydroelectric plants or that would result in "socialized" facilities impacting New York's markets.

Indian Point Safe Energy Coalition (IPSEC), Public Health and Sustainable Energy (PHASE)

Initial

IPSEC and PHASE request that any and all misleading and scientifically incorrect statements regarding nuclear as being "emission free", a "zero-emission source", or "renewable energy" be removed and that any and all preferential treatment or subsidies to nuclear energy production in New York State be eliminated. IPSEC and PHASE believe that nuclear reactor production of electricity is not emission free, it is not carbon free, nor is it renewable. Therefore, the PSC should not include nuclear energy in the CES or any renewable energy portfolio.

IPSEC and PHASE states that greenhouse gases are emitted in all stages of the lifecycle of a nuclear reactor: construction, operation, fuel production, dismantling and waste disposal. Also, the carbon footprint of the nuclear fuel cycle is comparable to that of natural gas electricity production, such as, mining, milling, enrichment, transportation, extensive construction, cooling, dismantling, and storage of nuclear waste.

IPSEC and PHASE believe that it is waste of taxpayer dollars to financially continue taxpayer subsidization of unstainable nuclear industry. The financial long-term burden on all NYS residents is wholly unacceptable. IPSEC and PHASE state that based on NYS Cancer Registry Data and United States CDC data studies have found that the thyroid cancer rates in

areas surrounding operating nuclear reactors are 65% higher than the rest of the nation.

IPSEC and PHASE state that the cost/benefit of NYS giving nuclear energy production preferential treatment is unreasonable. Nuclear energy only increases costs to NYS taxpayers without justified benefits, and unsupported scientific evidence. Based on science, NYS cannot consider nuclear energy as being emission free, carbon free or as an option for renewable energy tax credits.

IPSEC and PHASE request additional time for public comment on this important matter, and request Staff White Paper be edited to remove any and all reference to nuclear, as being emission free or zero emission or renewable or an option for ZEC's support of nuclear facilities.

Institute for Policy Integrity, NYU School of Law (Policy Integrity)

Initial

The Policy Integrity believes that the CES may not be effective in achieving greenhouse gas reductions (GHG) if the targets or alternative compliance payments (ACP) are not set optimally. The Policy Integrity argues that in order to adequately set the ACP, it is important for the state to establish clear goals for the CES. The Policy Integrity suggests as renewable generation technology improves, the cost of acquiring new incremental renewable generation may decline and could justify a lower ACP in the future or could justify raising renewable energy targets. The Commission should recognize the regional market conditions when setting ACP levels because neighboring states may have ACP levels higher that could distort the state's REC market. The Policy Integrity supports frequent review of ACPs because it is necessary to adjust to changing market conditions and consider redistributing part of the collected ACP to the ratepayers who are adversely affected, especially the vulnerable low-income customers. The Policy Integrity notes that a tiered approach may drive development of new generation technologies, because restricting a portion of the CES to certain supply type the market would not otherwise provide—whether for reasons of technology price, geographic location, or otherwise—necessarily raises the overall program cost. Using different tiers for different resources and different vintages – new or existing plants – would overly fragment the market, and raise liquidity concerns. CES policy objectives can be achieved in a least-cost manner, and the Commission should consider the use of multipliers. The Policy

Integrity recommends the Commission should provide a better justification of why they have chosen the tiered approach as opposed to a multiplier approach.

The Policy Integrity supports banking of credits to provide LSEs additional compliance flexibility, and help lower compliance costs. In addition, Policy Integrity argues that banking provides incentives for early investment in eligible facilities. While borrowing would provide flexibility, the Policy Integrity believes it may also hinder the policy goals of the CES and the Commission should impose strict time and quantity limits. The Policy Integrity advises the Commission should use the methodology they adopted in the BCA Order to set an appropriate value for the benefits nuclear plants provide through avoided carbon emissions. The value of any other attribute that the Commission would like to recognize, such as reliability, should similarly be calculated based on the actual value of the attribute, as described in the Commission's BCA Framework Order, and not based on the anticipated operating costs or revenues of a particular plant. The Policy Integrity supports the Commission putting in safeguards to reevaluate the benefits of nuclear plants periodically, allow this tier to continue only to the extent that nuclear plants continue to provide incremental benefits that are not properly valued by energy markets, and ensure that it is the best use of rate-payer funds.

International Brotherhood of Electrical Workers, Local Union #43 (IBEW)

Initial

The IBEW strongly supports the CES, particularly, in recognizing nuclear power as a carbon free energy source. The IBEW believes that the upstate nuclear plants are vital to the State and provide tremendous economic, environmental and reliable energy benefits to New York families and communities.

Joint Landowners Coalition of New York, Inc.(Joint Landowners)

Initial

The Joint Landowners are concerned that the build-out of larger solar farms may have some positive and negative environmental impact. The Joint Landowners suggest the Commission prepare a Generic Environmental Impact Statement (GEIS) as provided in the SEQR law to allow for the projects to progress smoothly and rapidly. Many solar companies have targeted rural areas in the state with prime farm land or mature forest with a high degree of carbon sequestration. Issues such as forest fragmentation, loss of wildlife habitat and land

restoration are more than enough to trigger a cumulative impact study of siting use and according to the Joint Landowners. Therefore, only a full and complete examination of the environmental impacts of such massive solar build-out can disclose and address its material and adverse environmental impacts.

Joint Utilities: Con Edison, Niagara Mohawk Power Corporation d/b/a National Grid, and Orange and Rockland Utilities, Inc. (JU)

Initial

The JU proposes a portfolio approach to procurement that includes three, each of which would be implemented simultaneously: (1) expansion of the current voluntary market; (2) continuation and enhancement of NYSERDA's REC-only contracting; and (3) competitive procurement using the Universal Renewables model. The JU support the continued development of all voluntary renewable market activities in New York and the Commission should adopt mechanisms that prevent this market from being superseded by other State initiatives. The JU believes this voluntary market should be reserved for a portion of the Tier 1 goal. The JU supports New York's resource procurement strategy should include a continuation of NYSERDA's long-term REC-only contracts, establishing regular resource solicitations larger in scale and longer in term by allowing deliverable out-of-state resources. According to the JU, NYSERDA should continue to fund its REC-only contracts *via* utility customer collections, as under the current RPS Main Tier Program with the addition of the "pay-as-you-go" concept for utility collections and remittances to NYSERDA. The JU recommends the "Universal Renewable" model. The JU opposes bundled PPAs because they will force utility customers to keep paying developers future-market prices even after the PPA expires and all fixed costs have been recovered. The JU believes that bundled PPAs shift considerably more risk from developers to customers compared to NYSERDA's REC-only contracts. The JU points out that history demonstrates the risks and costs to customers inherent in the mandatory utility-backed PPA model. The *Hughes v. Talen Energy Marketing, LLC*, place potential jurisdictional challenges to state-mandated PPAs introduce risk to the market according to the JU's comment. The JU advocate that RECs are a proven and reliable tracking mechanism to account for the development, procurement, and generation of renewable energy across the United States and support the NYGATS tracking system. The JU suggest way that the Commission should seek to reduce or eliminate some of the

negative impacts that have occurred in REC markets in other states.

The JU suggests banking and borrowing of RECs from year to year helps to mitigate this effect, but opposes the ACP because it has proven counterproductive to cost-effectively meeting renewable targets. The JU suggest that Staff and the Commission consider ways to limit this volatility and the overall impact of ACP payments on customer rates, but the utilities must be able to recover all program-related costs. The JU urges the Commission to coordinate with neighboring states to establish an alternative to the ACP structure that addresses interregional issues. The JU stands ready to work with the Commission and their Energy Efficiency programs to meet the CES goals. The JU supports Staff's goals in proposing market mechanisms such as ZECs to maintain over the longer term, and the proposed expedited program to provide financial support the nuclear facilities as an interim measure. However, the JU suggests that the State should monitor and perhaps seek changes to wholesale electric markets administered by the NYISO. The JU recommends that DER projects that receive net metering should transfer the value of any RECs they generate to the utility that effectively purchases the power they send out onto the grid. The JU support the import of large-scale Canadian hydroelectric and the Commission should create a separate Tier 4 for large hydroelectric supply that could value the environmental attributes of these important resources at a level that more closely reflects their cost structure.

Reply

The JU states that both Navigant Consulting and the Climate Policy Initiative have found that the PPA model proposed in the Staff White Paper is 13% and 33% more expensive for customers that the "Universal Renewables" proposed by the Utilities. The JU reiterates its position that the Commission should not order utilities to enter long-term PPAs with renewable power developers. The JU agrees with the many commenters who criticized long-term bundled PPAs for their inherent risks to customers. The JU reemphasizes its support in the expansion of energy efficiency in the CES. The JU advocates that LIPA and NYPA should participate in meeting the 50x30 goal because together, they serve customers who represent approximately 30% of the State's electric demand. The JU supports a transparent and non-bypassable method to provide the funding needed to meet the CES.

The JU reiterates its position that relying on a single procurement pathway to support the development of the new

renewable resources needed to meet the 50x30 goal presents unnecessary risks. The Utilities recommend a portfolio approach. JU supports the Universal Renewable model as the most cost-effective procurement option for customers. This position is supported by both Navigant and NYSERDA's own consultant. Joint Utilities agree with commenters who support the development of the voluntary market for renewable energy, and who suggest that New York eligible RECs purchased by customers should count toward meeting the CES goal. Joint Utilities agree in concept that there should be a mechanism that would allow customers to offset their obligation to contribute to the CES via their electricity bill. They agree with ACE-NY and others that suggest NYSERDA could continue to procure a portion of the RECs via its existing REC-only contracting mechanism, with some improvements. JU advises the CES Program should be designed to control overall costs for customers and avoid requiring customers to pay more than necessary for renewable energy and RECs.

JU disagrees with commenters who recommend the establishment of separate carve-outs for certain technologies. As referenced by NYPA and the Institute for Policy Integrity of New York University School of Law, such carve-outs would unnecessarily segment the market for renewable energy resources, leading to reduced liquidity and decreasing the price-limiting effects of competition. Also, JU believes such carve-outs are inconsistent with a program that seeks to build renewable generation cost-effectively and with the greatest benefits for customers. JU seeks a technology-neutral renewable energy portfolio model with procurements based on project economics and benefits, such as enhanced reliability, capacity at peak, and least-cost grid resources, will lead to the best outcomes. JU disagrees with SEIA regarding the need for a distributed solar carve-out, and agree with those who recommend these resources should be eligible to receive Tier 1 RECs.

JU agrees with Multiple Intervenors that the Commission should avoid creating a "race to the top" among states by establishing competing ACPs. JU supports commenters who recommend that if any ACP proceeds are collected, they should only be used to augment utility-administered EE programs, develop new renewable energy, and to support the electrification of current inefficient uses of petroleum, such as transportation and heating and not a target of the state general fund. According to the JU, out-of-state resources should be eligible for a portion of the 50 by 30 goal. JU agree with other commenters that all LSEs should contribute to meeting CES goals with a mechanism that includes CES program costs on the supply

side of the bill. Further, to the extent that electric distribution companies are required to incur program related costs, the Commission should establish an appropriate mechanism that provides the companies a means for the full recovery of such cost.

KEI (USA) Power Management Inc. (KEI)

Initial

KEI Power Management (KEI) believes that the incentives given to new generation should not grant an unfair market advantage and discriminate against existing generation and incentives should be built into the program to encourage improvements in existing generation. KEI is concerned that undervaluing existing generation reduces the ability of the market to meet renewable targets in a timely fashion, and increases costs to the consumer and threatens now-operational projects. KEI maintains that discrimination against vintage units will reduce the supply of renewable generation in the near term, and could drive small hydro assets out of business. KEI points out that New York State is rich with existing and operating emissions-free, hydroelectric plants as well as decommissioned plants capable of being refurbished generation and due to their historical relationship with industrial and commercial siting, many existing hydroelectric units lie within transmission-constrained locations and do not require substantial transmission investments or siting to deliver energy into these locations. KEI adds that hydro generation provides an additional relief valve against price jumps during natural gas shortages by offering a broader fuel stock to the market.

Laborers' International Union of North America, Laborers' Local Union No. 633

Initial

Laborers' International Union of North America supports the CES, particularly, the inclusion of nuclear energy in the CES, and the recognition of nuclear power as a carbon free energy sources. The Union states that nuclear energy is carbon free and is New York's largest source of zero emission electricity.

Long Island Federation of Labor, AFL-CIO

Initial

Long Island Federation of Labor, AFL-CIO, supports the CES for the following reasons: It will significantly reduce air pollution emissions and help to mitigate climate change; it will promote the use of renewables as a source of new capacity; it

will diversify New York's energy supply and help to stabilize and, over the long term, reduce the wholesale cost of electric power; and it will keep more of the New York's spending on energy within the State and thus spur job creation and economic development, especially for newer technologies.

Long Island Federation of Labor, AFL-CIO is deeply concerned that the CES fails to include provisions to support the development of offshore wind facilities New York State should commit to a pipeline of at least 2,000 MW with an initial procurement in 2017.

Long Island Federation of Labor, AFL-CIO states that Offshore Wind will promote fuel diversity and energy cost savings because its ratepayers are exposed to uncertainty based on volatility in the gas markets. This can become extreme during the winter months when gas pipeline capacity becomes constrained, as we have seen in recent years. Long Island Federation of Labor, AFL-CIO believes that Offshore Wind will stimulate job creation and economic development. They believe that Offshore Wind will promote geographic balance in the CES. By delivering large quantities of renewable energy directly into New York City and Long Island, offshore wind power can help to bring geographic balance to the LSR program and ensure that downstate ratepayers receive the same benefits of reduced emissions and economic development that the rest of the state has received for many years.

Long Island Federation of Labor, AFL-CIO states that when built at scale, offshore wind can be the most cost-effective large-scale energy resource for downstate New York. Long Island Federation of Labor, AFL-CIO states that the CES design proposed in the staff whitepaper identifies the need for long term bundled contracts with one or more credit-worthy counterparties. There exists a large and liquid market for financing new wind energy projects onshore and offshore. This market is willing and able to accept construction cost risk and energy production risk, but is not willing to take merchant commodity price risk. Therefore, long term price certainty through the form of a bundled power purchase agreement is critical to achieving cost-effective projects, both onshore and offshore.

Long Island Federation of Labor, AFL-CIO notes that the University of Delaware study states that, offshore wind can be delivered most cost-effectively when there is a visible pipeline of at least 2,000 MW. Given the magnitude of demand created by CES, a commitment of 2,000 MW to offshore wind would represent only approximately 15% of the total new

renewable capacity to be built. However, this level of commitment would achieve both significant reductions in cost and the development of a local supply chain, including the corresponding job growth and economic development.

Long Island Federation of Labor, AFL-CIO states that customers of the Long Island Power Authority (LIPA) represent approximately 15% of all electricity use in New York State, yet LIPA's renewables programs lag significantly behind those of the rest of the state in driving renewables penetration. The State's ability to achieve a 50% CES by 2030 will be greatly enhanced if LIPA is part of the same program as the rest of the utilities in the State. Further, given its location, Long Island is especially well suited to benefit from offshore wind development.

Given the challenges in constructing any new energy infrastructure in downstate New York, and given the higher value of the energy and capacity markets, it is appropriate to allow for such projects to offer and compete for pricing that is differentiated from renewable energy delivered elsewhere in the state. Long Island Federation of Labor, AFL-CIO supports an offshore wind tier, a REC-multiplier for offshore wind or other mechanisms. If a technology-specific basis for offshore wind is not favored, an alternative could be a geographic basis, with a tier or multiplier for renewable energy projects that are located within 50 miles of New York City or Long Island and which have their initial point of interconnection in Zone J and Zone K.

Low Impact Hydropower Institute (LIHI)

Reply

The LIHI supports the Commission’s inclusion of hydropower in both the proposed Tier 1 and Tier 2 structure and supports Brookfield Renewable Energy Group’s request to include low impact certified hydropower in Tier 1. Further, LIHI requests that such qualification be without any restrictions related to installed capacity or date of operation but instead use a standards based criteria approach such as LIHI’s. If not, LIHI supports including existing hydropower that is low impact certified in Tier 2, replacing the complex administrative burden of reviewing proof of financial hardship as exists in the current Maintenance Tier. LIHI also agrees with Brookfield’s and Gravity Renewable Inc.’s support of small hydro and their request to collapse Tier 2 sub tiers into a single tier regardless of perceived competitiveness. While LIHI understands the desire to add “new” sources of renewable generation, LIHI strongly supports

reinvestment in aging, legacy generating assets. LIHI believes the date of operation requirement is arbitrary, and leaves a significant amount of new energy potential on the table that could be harvested from the efficiency and new capacity gains from the refurbishment of existing hydroelectric assets.

LIHI argues that New York would be better served by encouraging investments in the optimization of legacy assets, resulting positive benefits in economic development and environmental gains that too often are externalized from the valuation of energy resources. LIHI maintains that Tier 2 should not contain sub tiers and should include low impact hydropower. The White Paper asserts that existing small hydropower has few opportunities for participating in REC markets in the region given the inclusion of low impact certified hydropower in the ISO NE and PJM control areas through statutes and regulations in Delaware, Massachusetts, and Pennsylvania, according to LIHI comments.

Manufacturers Association (MACNY)

Reply

MACNY believes that the cost of Power Purchase Agreements for large scale renewable generation will be substantially higher than proposed in the CES Cost Study and is concerned the benefit from renewable energy is based on a calculation of the present value of uncertain future benefits from reduced carbon. MACNY argues that these benefits will not be realized for years, if at all. MACNY believes that the manufacturing sector should not bear the cost of the social benefit that is proposed for all New York citizens and supports Clean Energy investments paid by the taxpayers of New York and not simply energy consumers. Therefore, MACNY requests that the manufacturing sector be exempt from the CES surcharges. MACNY supports maintaining New York's nuclear fleet as it will benefit New Yorkers over many years. MACNY states that if a subsidy be needed to keep these assets in operation over the short term, then the most cost effective means for doing so should be determined instead of implemented a long term subsidy program that may not be needed.

MACNY supports the goal of fuel diversity to ensure reliability and avoid price volatility. MACNY maintains the belief that keeping rate payers’ costs affordable is one of the key roles of the Public Service Commission. MACNY requests that Commission to provide greater certainty before the ratepayers can commit to long-term power purchase agreements for large scale renewable energy.

Multiple Intervenors (MI)

Initial

MI recommends that the initial target become effective 2018, not 2017. MI opposes NYPA as part of the CES, because the proposed inclusion would increase costs to NYPA's customers and wreak havoc on the State's economic development efforts.

MI states that for each tier, a firm set of requirements should be established through 2020, with targets through 2030 to be developed in an "Implementation Plan."

MI is concerned that the ACP will serve as the cost floor. ACP revenues should be returned to customers. MI believes that competitive long-term procurements by NYSERDA or EDCs should be implemented, as needed, for specific tiers to support project financing, reduce compliance costs, and provide both generators and customers with price stability.

MI is concerned about the potential costs of mandated customer-funded subsidies to selected nuclear generating facilities and is concerned about the need and appropriateness of the proposed Tier 3.

MI states that the Commission needs to evaluate the true economic cost of energy efficiency versus the true economic cost of subsidizing renewable generation.

National Energy Marketers Association (NEM)

Initial

NEM recommends the renewable energy compliance process be set up in a manner that provides ESCOs with clear tools for compliance and reporting, and recommends utilizing Massachusetts renewable portfolio standard requirements. NEM recommends that out-of-state renewable generation resources be included for eligibility in the program. However, greater flexibility in the deliverability requirement be granted than was proposed, in order to encourage a greater array of renewable offerings.

NEM believes the nuclear generation and ZEC proposal should not appropriately be considered within the scope of the instant renewable energy proceeding.

National Fuel Cell Research Center (NFCRC)

Initial

NFCRC writes that fuel cell possess attributes essential to the CES and REV objectives such as: reduced GHG; increase system efficiency; localized DER; providing renewable power; providing firm capacity. In New York, highly efficient electric and CHP

fuel cell systems have been successfully operating pursuant to the Renewable Portfolio Standard (RPS) Main Tier and Customer-sited Tier programs.

NFCRC strongly recommends that the Commission avoid the creation of special tiers that attempt to incent specific technologies. According to NFCRC bundled PPAs will preclude true DER projects that are located behind the meter, and if the promotion of REV market objectives including the encouragement of distributed generation is a guiding principle of the CES, then there must be a significant portion of the CES obligation that is met via unbundled –attributes only contracts.

NFCRC proposes that at least thirty-five (35) percent of the CES obligation be dedicated to REC projects that include DER in or near load centers and sixty-five (65) percent be reserved for bundled PPA contracts.

NFCRC states that investments in fuel cell DER capacity will produce vastly more renewable energy than wind or solar power systems per unit of capacity installed.

NFCRC believes the initial 2017 and 2020 timeline for interim CES targets established in the White Paper is insufficient. NFCRC recommends the use of a straight line projection through 2030, with an allowance for adjustments via a defined and transparent process during the intended triennial review of the CES program.

NFCRC recommends that the Commission avoid the front-loading of targets in an effort to maximize federal incentives, while achieving the ultimate 2030 CES goal – NFCRC believes that existing incentives, including the federal ITC and NYS CEF programs are in place, and additional CES incentives are not needed. NFCRC believes that a certain percentage of the CES obligation should come from within each utilities service territory to ensure that utilities are appropriately focused on resources that are local and distributed rather than exclusively distant and centralized.

NFCRC states that the Commission should use any and all measures available to it to ensure that the positive impact of the Clean Energy Standard is realized on Long Island.

Natural Resources Defense Council, E4TheFuture, CLEAResult, Lime Energy, Association for Energy Affordability, and Alliance for Clean Energy New York (collectively "NRDC")

White Paper

A White Paper titled, "Aiming Higher Realizing the Full Potential of Cost-Effective Energy Efficiency in New York" was

prepared for NRDC to discuss the future of energy efficiency in New York State. NRDC believes the level of energy efficiency savings is far below what is possible from a technical and economic standpoint, and also relative to what nearby states are already achieving. NRDC states energy efficiency is New York's most cost-effective resource, and yet the state is at risk of losing out on much of its potential in coming years. NRDC notes that going forward, NYSERDA will play an important role in delivering market transformation and low-income efficiency programs. However, there are no enforceable efficiency savings target for NYSERDA and their goals are largely grounded in market transformation efforts. NRDC believes it is all the more important that the Commission provide clarity regarding what savings levels the state intends to procure. Further, the Staff's forecast of efficiency savings in the CES White Paper is well below the amount of cost-effective efficiency savings possible in New York. NRDC contends that there is no question that the utilities could achieve significantly higher levels of cost-effective savings than these targets and evidence from nearby states indicates that New York can achieve much higher levels of energy efficiency savings.

Although the Commission created the Clean Energy Advisory Council (CEAC), and tasked it with manifold objectives it somewhat more restricted and NRDC suggests that these Steering Committee members be chosen so as to include environmental and consumer advocates, and that those members of the Steering Committee represent their constituencies. NRDC perceives that many market barriers continue to hinder electricity customers from adopting energy efficiency measures on their own even though it is cost effective and the economics are not enough to motivate them. NRDC identifies several barriers such as, but not limited to: lack of capital access, purchasing procedures, habits and uncertainty, and risk avoidance. NRDC advises the Commission that regulatory policies are necessary to overcome these barriers and energy efficiency programs should be explicitly designed to overcome these barriers. NRDC recommends programs targeting facing low-income customers should provide incentives that cover a larger portion of the cost of the efficiency project and also respond to the needs of the hard-to-reach customers such as multi-family residential, and small businesses.

NRDC suggests, EIMs can be one of the most important regulatory policies to encourage the successful implementation of energy efficiency resources. Coupled with energy efficiency targets, or standards, EIMs are highly effective in achieving aggressive energy savings targets. NRDC recommends EIMs should

be implemented as soon as possible to ensure that efficiency opportunities are not lost. Ideally, the Commission should develop statewide efficiency savings targets, with corresponding EIM targets for each electric utility, for the years 2017 through 2020. While the EIMs should only be applied to the utilities, NRDC urges the utilities to take advantage of third-party energy efficiency vendors and other market-based mechanisms to improve the efficacy of efficiency delivery.

NRDC recommends that the Commission establish statewide energy efficiency targets for the utilities and NYSERDA that would achieve statewide annual efficiency savings of 3.0 percent of retail sales by 2020. NRDC suggests the utilities and NYSERDA should work to develop joint plans to reach these annual goals. The Commission should recognize that any savings from energy efficiency will reduce total electricity demand will reduce the amount of renewable generation required, and thereby reduce the cost of complying with the CES.

Supplemental

According to the NRDC, the Commission has both express and implied authority under several provisions of the Public Service Laws to order the utilities to enter into long-term PPAs for renewable energy.

NRDC claims The New York Public Service Commission ("Commission" or "PSC") possesses all "powers and duties . . . specified" in the Public Service Law, "and also all powers necessary or proper to enable it to carry out the purposes of" the Public Service Law Section 4 (McKinney 2016). The Commission's specifically delegated powers include several sources of authority that permit it to require the State's electric distribution companies to enter into long-term power purchase agreements, according to NRDC.

NRDC finds that under Public Service Law, the Commission can mandate long-term contracts as an "improvement" in the "supply of electricity." Similarly, the Commission has authority to require long-term PPAs. NRDC believe that both the Clean Energy Standard Cost Study and the NYSERDA's Large-Scale Renewable Energy Development Options and Assessment report have made it clear that long-term PPAs with renewable energy projects would be a "reasonable improvement" in this supply that "will best promote the public interest" and "preserve the public health." Accordingly, pursuant to Public Service Law § 66(2), the Commission has the "power to order" the State's distribution companies to supply their electricity through such contracts.

According to NRDC, in addition to explicit grants of authority, the Commission also has "all powers necessary or

proper to enable it to carry out the purposes of [the Public Service Law Section 4].” NRDC argues the Commission must abide by several statutory requirements in carrying out its regulation of the State’s utilities, including the requirement that it must render decisions that are consistent with the most recent State Energy Plan Section and the requirement that it must encourage the State’s utilities to carry out long-range programs to preserve environmental values. According to NRDC, the Public Service Commission’s Authority is not limited by additional past or present statutory requirements pertaining to PPAs for certain specific resources. Moreover, the fact that the PSC has been required under Public Service Law 66-c and 66-g to mandate the state’s electric distribution companies to enter into long-term contracts with certain types of resources under certain terms in no way limits the Commission’s authority to require long-term contracts in other contexts pursuant to other express and implied powers.

NRDC points to Public Service Law 66-g which states that the Commission “shall require an electric corporation to enter into long-term contracts to purchase or sell electricity produced from indigenous natural gas supplies,” and does not limit the Commission’s authority to direct utilities to enter into long-term contracts in other contexts.

According to NRDC, PSC has clear, explicit requirements to order utilities to enter into long-term contracts to purchase electricity from qualifying facilities, and indigenous natural gas sites.

Natural Gas Supply Association (NGSA)

Initial

NGSA urges the Commission to allow market forces to establish a sustainable, cost effective path for carbon reduction instead of adopting the subsidy-style concepts discussed in the January 25, 2016 *Staff White Paper on Clean Energy Standard* (*Staff White Paper*).

NGSA believes that the Commission should avoid introducing subsidy-style payments for specific sources of generation. For example, the Zero Emission Credit (ZEC) would subsidize uneconomical nuclear facilities, resulting in higher consumer energy costs and distort the wholesale electricity market through “out-of-market” payments.

NGSA argues that the Staff White Paper has failed to identify how any such payment would be transitioned to a longer term and more sustainable energy mix and how the payments might be adjusted as wholesale market conditions change. In addition,

NGSA states that, it is not clear that utility rates are suitable mechanism for the payment of a subsidy that was "necessitated" by wholesale market conditions. Moreover, NGSA writes that the ZEC proposal is targeted at two particular generating facilities, yet ignores another, it is subject to charges of discrimination.

NGSA suggest that greater use of natural gas for electricity generation has produced significant reductions in U.S. carbon emissions because, over its lifecycle, natural gas emits only about half the carbon dioxide of other fossil fuels when combusted, whether to make electricity, forge steel or provide heat and has additional advantages over other fuels in sulfur dioxide, mercury, nitrogen oxide and particulate matter emissions. NGSA states that we owe it to New York's energy consumers to begin the work toward a lower carbon environment by building on the most cost-effective source of carbon emission reductions -- natural gas.

New York Affordable Reliable Electricity Alliance (New York AREA)

Initial

New York AREA supports the preservation of the State's entire nuclear fleet, and urge in reducing electricity costs and improving reliability.

New York AREA states to end the State's opposition to Indian Point's 20-year license renewal, and believe that the plant is well run and safe. Also, NYC DEP's study found that closing the plant would increase carbon emissions by at least 7% and as much as 15% in New York State and by at least 8% and as much as 19% in New York City. New York AREA believes New York's nuclear fleet is essential to the State's economy and environmental objectives as a bridge to the renewable future.

New York Association of Public Power (NYAPP)

Initial

NYAPP states that the CES should not be mandatory for New York State's municipal and cooperative utilities. Given the Commission's decision not to apply the Clean Energy Fund framework to municipal and cooperative utilities, NYAPP believes that there is no basis to apply the Clean Energy Standard to municipal and cooperative utilities.

NYAPP states that the Commission has a long history of recognizing municipal and cooperative utilities' unique circumstances and contributions. The CES, like the RPS and the EEPS, should recognize the unique contribution of NYAPP's

municipal and cooperative utilities to the State's renewable energy goals. As such, the Commission should exempt municipal utilities from the CES.

NYAPP writes that, it would be sound public policy to exempt all municipal utilities from the CES, rather than create a distinction between Commission-jurisdictional municipal utilities and non-jurisdictional municipal and Cooperative utilities.

NYAPP notes that, its members have a demonstrated track record of taking actions that are consistent with the goals underlying the State Energy Plan and the CES. Thus, NYAPP believes that exempting its members from the CES will support, not undermine, the goals articulated in the State Energy Plan.

Reply

NYAPP members support NYPA's efforts to develop Memoranda of Understanding (MOU) with its municipal and cooperative customers to develop REV related projects and however, NYAPP will work with NYPA to achieve and maintain the 50 x 30 goal separate from the Staff White Paper's proposal. NYAPP agrees with NYPA, that any increase in energy costs for NYPA's customers could undermine the success of NYPA's low-cost power economic development programs. NYAPP disagrees with NYSEG/RG&E/Central the costs to achieve that goal should be paid equally and fairly by all New Yorkers. NYAPP asks the Commission to reject the proposal of "Central Procurement" by NYSEG/RG&E/Central Hudson. NYAPP believes it is not appropriate to apply such a prescriptive proposal to municipal and cooperative utilities that have very different business models.

NYAPP recommends that the Commission should allow municipal and cooperative utilities to achieve and maintain the 50 x 30 goal via a voluntary, portfolio approach and voluntary PPAs can serve as an effective tool in meeting the 50 x 30 goal. Under a portfolio approach, NYAPP supports municipal and cooperative utilities able to use both RECs and PPAs as a means of achieving and maintain the 50 x 30 goal. NYAPP agrees that competitive markets will play an important role in meeting the State's clean energy goals.

New York Battery and Energy Storage Technology Consortium (NY-BEST)

Initial

NY-BEST believes that the CES White Paper fails to recognize the essential role for energy storage in enabling the

50 by 30 goal. NY BEST believes in expanding the CES to include energy storage.

NY-BEST states that storing the energy produced by renewables for use at a later time when it is needed is essential to optimizing the renewable energy and ensuring the reliability and efficiency of the electric grid, especially as we add increasing amounts of renewable energy to the system. NY-BEST believes that the combination of batteries and other energy storage devices with renewables allows the renewable energy to be used at any time and ultimately has the potential to fulfill all energy needs.

NY-BEST recommends in establishing as part of the CES, a requirement for Load Serving Entities (LSEs) to add flexible assets, in proposition to new renewable assets, to their systems.

NY-BEST proposes that the CES establish a Flexible Energy Credit (FLEC) defined as non-carbon emitting assets meeting certain performance requirements that may be distributed or centrally located and provide energy for a minimum 1 hour duration period. NY-BEST proposes the same rules for RECs and ZEC would apply for FLECs, with LSEs required to acquire a level of FLECs that would be set at approximately 10-15% of the total REC level.

NY-BEST urge the PSC to commission a detailed study to assess the need for additional storage capacity and incorporate an analysis of the attendant multiple benefits that energy storage would provide to the entire grid system.

NY-BEST encourages the design of new programs to encourage integration of electric vehicles with the grid through charging stations and devices and effective controls, benefitting both consumers and the LSEs.

NY-BEST states that the CES White Paper is unclear whether CES targets would apply to load for grid-scale energy storage.

New York Bioenergy Association (NYBA)

Initial

NYBA believes that biomass power facilities need to be able to continue to monetize the value of their renewable attributes. In order to optimize use of the state’s abundant rural resources and support and create jobs – particularly in the northern part of the State – NYBA believes that it is critical to allow continued participation of biomass power facilities in the State’s successor program to the Maintenance Tier of the RPS program

NYBA states that it is critical to maintain support of these biomass existing projects that have contributed so significantly to New York State and created economic benefits that have outweighed the state's investment. Biomass facilities have been affected just the same as nuclear facilities due to record-low wholesale electricity prices.

NYBA believes that the State should encourage in providing a mechanism in the new Large-Scale Renewable program, that would ensure existing biomass projects to be able to continue to monetize the value of their renewable energy attributes at a sufficient price in New York's marketplace.

New York Climate Action Group

Initial

New York Climate Action Group demands that the Commission hold a timely and comprehensive open hearing regarding the recent proposal to grant vast public subsidies to nuclear energy companies in the public's name. New York Climate Action Group states that nuclear plant owners are already heavily subsidized.

New York Climate Action Group states that, to refer to nuclear energy as "emissions free" ignores that nuclear plants emit radioactive fluids and gases as a normal and necessary part of their functioning, and turns a blind eye to the totality of the fuel cycle that includes mining, milling, enrichment, transportation and extensive construction.

New York Climate Action Group notes that there is no official monitoring in NY as in other states that are picking up runaway radioactive readings in major city centers across the country.

New York Climate Action Group states that the PSC allowing only a limited public comment period without a public hearing prior to making sweeping policy changes on an issue that regards taxpayer money, our precious resources and health, seems an affront to the citizenry and an overreach on the part of the PSC. Any attempt to avoid public scrutiny on such an important issue as this only adds fuel to the fire.

New York Climate Action Group demands an extension for public comments and open public hearings on energy subsidies to nuclear energy companies. New York Climate Action Group states that there should be no preferential treatment to nuclear interests and their affiliates in determining the future of energy policy.

New York Cow Power Coalition (Cow Power)

Initial

New York Cow Power Coalition believes that anaerobic digesters (ADGs) that generate electricity are the safest, cleanest, most reliable, most environmentally-positive form of renewable energy generation. New York Cow Power Coalition states that New York's dairy industry offers a tremendous package of benefits that will significantly assist in achieving the State's 50% renewable energy goal.

New York Cow Power Coalition recommends a CES tier for new and existing ADG power generation that will incorporate the following concepts. They are: 1) Enable the aggregation of dairy farm ADG-generated energy within a utility service area; 2) incent, enable and facilitate long-term PPAs that would encourage continuing operation, increased capital investment, and expansion of existing ADGs and make the installation of new ADGs more economically viable for other dairy farms in New York; 3) restore fairness; and 4) must take into account the benefits of ADGs.

Reply

Cow Power agrees with comments submitted by Cornell University's College of Agriculture and Life Sciences' Department of Biological and Environmental Engineering that anaerobic digester biogas generation of electricity reduces net greenhouse gas emissions. Therefore, they challenge the Department of Environmental Conservation to clarify their position offered in their April 22nd submittal. The New York Cow Power Coalition recognizes the merits of LMP+D. Further, they recommended that the definition of "D" include all the environmental attributes created by ADG power. However, Cow Power believes that the solar industry consortium's proposal to add "E" into the equation is an excellent idea and provides a better pathway for environmental attributes to find their way into the recompense package for ADG power.

New York Farm Bureau (NYFB)

Initial

NYFB urges the Commission to focus on the value, development and deployment of small renewable energy generation (behind-the-meter), not just large-scale renewables. Also, NYFB believes that it is critical for CES to include and support solar, wind, biomass, and biogas.

NYFB is strongly concerned about the costs to consumer that the CES could impose. NYFB's primary concern of New York farmers' is energy costs. New York averages almost 5 cents per

kWh higher than the national average. This makes it more difficult for family farms to survive in New York.

New York Geothermal Energy Organization (NY-GEO)

Initial

NY GEO points out that the Staff White Paper includes a reference to the effect that electric vehicles (EV) and geothermal heat pumps (GHPs) will reduce carbon emissions, while increasing electricity demand. NY GEO refers to these technologies as beneficial electrification technologies (BET).

NY GEO believes that it is important that New York not adopt policies and practices that have "the inadvertent effect of deterring the adoption of beneficial technologies" and that by primarily focusing on the goal of attaining 50% by 2030, the Clean Energy Standard (CES) risks the inadvertent effect of making it harder to attain the goal of a 40% reduction of GHG emissions by 2030.

NY GEO indicates that there are other significant reasons why BETs such as GHPs need to be well integrated with the Clean Energy Standard. NY GEO agrees that peak demand reduction is a key economic consideration in New York's energy policies.

NY GEO argues that the CES can only be truly effective and comprehensive in relation to New York's energy pollution if it functions in a way that does not discourage beneficial electrification by providing a way to reward (or at least hold harmless) LSE's.

NY GEO advocates two ways, in the context of an electricity focused Clean Energy Standard obligation, to more fairly allow LSEs and electricity consumers to take on obligations for the heating and transportation sectors. One way is to hold LSE's harmless from increased load stemming from increased installations of BET. The second is to provide incentives that outweigh the disincentive that increasing load represents in an electrical compliance obligation environment.

NY GEO urges the PSC to consider adopting Thermal Renewable Energy Certificates (TRECs) as a way to begin developing parity for thermal renewable technologies. TRECs may provide a mechanism to allow the electric sector to receive credit for taking on the pollution reduction obligations of the heating sector. The TRECs, like RECs would be earned or purchased by LSE's to meet their CES compliance obligation. The number of TRECs, grow proportionally with new renewable heating systems installed. New Hampshire has led the way for TREC implementation in the United States. Twelve states are at various points of

adopting TRECS, according to the Clean Energy States Alliance, including Massachusetts and Maryland.

New York Independent System Operator, Inc., (NYISO):

Initial

NYISO believes that bundled Power Purchase Agreements could adversely affect energy market efficiency and system reliability and shift financial risk to consumers and should only be utilized as a last resort. The NYISO agrees with NREL and LBNL that RECs are the appropriate incentive for renewable resources in areas with competitive energy markets such as New York.

NYISO states that Canadian hydro is needed to meet goal and should be eligible for REC payments to broaden competition and control overall program costs. NYISO believes the CES could leverage access to Canadian hydroelectric resources to support in-state renewable development, manage the total costs to consumers, and support compliance with emissions goals.

Supplemental Comments

The NYISO has concerns over how the Commission is developing and planning to implement the CES to achieve the 50% by 30 objectives. The NYISO states that DPS SEIS correctly assumes that a large percentage of the new renewable resources will be intermittent, located away from the State's load centers, and distributed over a large geographic area. The NYISO is concerned that such a significant build-out of renewable resources will require new or upgraded transmission facilities on both the bulk power system and the sub-transmission systems to deliver the output of these new resources to the southern and eastern portions of New York State, where demand for electricity is greatest. The NYISO also sees transmission system constraints already materialize at a number of interfaces in the west to east and north to south directions across the State during certain system conditions. Given the potential gravity and magnitude of the CES-related transmission additions, the NYISO believes it would be prudent for the Commission to study this question in depth before taking any final action to implement the 50% by 30 initiative.

The NYISO believes operational tools and market products may need to evolve for reliable New York control area system operations. The NYISO indicates it will continue to evaluate how to evolve existing market products and operational tools to maintain system reliability. The NYISO states it is committed to continuing its efforts to meet these challenges. As the CES progresses, the NYISO will further evaluate the ramifications of significant additional intermittent resources on electric system

operations in New York through more specific analyses of New York Control Area-wide needs.

The NYISO expresses concern about the result the CES will have on the Installed Reserves Margin (IRM). The IRM has generally ranged between 15% and 18% in recent years. The NYISO explains that the primary driver of the Installed Capacity Requirement ICR) and IRM is expected generation resource performance (*i.e.*, resource availability) during periods when system loads are highest (*e.g.*, on-peak summer hours). The NYISO estimates that the DPS SEIS resource mix will increase the IRM from 17.5% to between 40% and 45%. As a result, NYISO states the estimated increase in the IRM resulting from the DPS SEIS resource mix will require the State to maintain an additional amount of nameplate capacity (*i.e.*, Installed Capacity), which is necessary to maintain reliability.

The NYISO supports retaining all existing nuclear generators to maintain the State's carbon emission reduction requirements and electric system reliability. The NYISO believes that an implementation of a short-term program is necessary to retain the State's nuclear generation resources for the near future. The NYISO intends to explore with its stakeholders market mechanisms to internalize the cost of carbon emissions within wholesale electricity prices.

New York Municipal Power Agency (NYMPA), and the Independent Energy Efficiency Program (IEEP)

Initial

NYMPA believes that the Commission should assign the RECs associated with the hydroelectric power under contract to NYMPA members to meet those members' REC obligations. States that both NYMPA members and NYPA jurisdictional municipal utilities should be allowed to continue to work in partnership with NYPA to achieve the goals of the CES in custom-tailored ways that best fit their unique circumstances.

NYMPA believes that requiring NYMPA members to procure RECs and ZECs using the three-tiered approach described in the White Paper would be unworkable. First, requiring NYMPA members to secure RECs from Tier 1 (incremental renewable generation) would ignore NYMPA's existing, long-standing statutory and contractual right to NYPA Niagara hydropower. Likewise, imposing an additional Tier 2 obligation on NYMPA members would require NYMPA to pay more for hydropower it is already buying. Finally, forcing NYMPA members to procure ZECs would require them to pay for power they do not need or use.

New York Power Authority (NYPA)

Initial

NYPA states that the CES needs to be responsive to NYPA's statute of providing low-cost power and ensure it will not conflict. NYPA's customers have stated they will move out of state if they do not have low-cost power.

NYPA customer's hydro purchases should be credited toward their annual obligation to avoid unequitable burden. NYPA supports out of state resource eligibility to reduce costs. NYPA states that PSC should make clear that sales to energy storage facilities will not be counted as part of an LSE's overall load for purpose of establishing CES compliance obligations. NYPA believes that, in order to increase market liquidity, NYPA recommends combining Tiers 1 and 2 or at least consolidate Tiers 2A and 2B. NYPA believes that eligibility criteria should allow for new hydro impoundments, and NYPA states that NYPA should be eligible to receive RECs. NYPA notes that CES should not increase the cost of mass transit. NYPA believes in limiting award of RECs to resources only when the LBMP for the resource's energy is positive. This will mitigate the risk that new resources would displace generation from existing wind and hydroelectric power or other renewable resources and encourage new resources to locate where there is a greater need for their output.

Reply

In its reply comments, NYPA reiterates its plans to work aggressively to help New York reach 50 x 30. However, neither NYPA's tariffs nor its contracts grant NYPA the flexibility to pass along CES costs to its customer base. Moreover, NYPA points out that it must adhere to its statutory mandate to provide low-cost power to various classes of customers. NYPA supports the H.Q. Energy Services (U.S.) Inc. comments in favor of the eligibility of storage impoundment hydroelectric power within the CES. NYPA agrees with the several parties that highlighted the important role that new transmission and sub-transmission will have in enabling the CES resources to be successfully deployed. NYPA agrees with the City of New York in its initial comments, that the deliverability of renewable power to southeastern New York will be important to ensure that all regions of the State receive the benefits of cleaner generation and less air pollution as a result of CES. To that end, NYPA supports utilizing the NYISO's Public Policy Requirement process to promote the construction and upgrade of transmission and sub-transmission systems in response to any identified future needs in order to ensure that the CES is successful. NYPA agrees with

the recommendation by other stakeholders that DPS Staff work with the Department of Environmental Conservation (DEC) in order to facilitate coordination between the Regional Greenhouse Gas Initiative (RGGI), the Clean Power Plan and the CES. NYPA continues to be willing to administrate a central procurement process for large scale renewables, as described in its August 12, 2015 comments in this proceeding. However, NYPA's ability to act in this role may require legislative action.

New York Solar Energy Industries Association (NYSEIA)

Initial

NYSEIA supports SEIA and Vote Solar's comments in this proceeding. NYSEIA recommends that the CES clean electricity compliance targets be set upfront through 2030, and not just through 2020.

NYSEIA states that SEIA and Vote Solar support the proposed three-tier structure, which creates separate tiers for new renewables, existing renewables, and nuclear, and mandates different contribution from each tier. NYSEIA strongly supports separate tiers by the age of projects, and occasionally by the technology. NYSEIA recommends that it would make sense for the CES to have an additional Tier for existing renewable generation facilities that will not qualify for RECs under the CES, but will still be counted toward New York's renewable electricity goal. They make this recommendation because as the proposed tier structure is currently configured, there is a significant amount of existing renewable electricity generation that would not fit under the proposed Tier 2 for existing generation.

NYSEIA believes CES targets should be more frontloaded to take advantage of the important cost reducing Federal incentives. The Commission should increase the CES compliance targets in the years 2017 – 2021.

NYSEIA states that a solar sub-tier is needed to be added to the proposed Tier 1 for the growth of utility scale solar, and that such solar will be essential to meeting the CES goals.

NYSEIA recommends that a significant proportion of the LSEs obligations be mandated in the CES to involve long-term contracts. NYSEIA believes long-term bundled contracts should be the dominant procurement mechanism and comprise the majority of the CES mandate. Bundled contracts are the lowest cost procurement option, benefitting both ratepayers and developers.

NYSEIA states that Alternative Compliance Payments (ACP) should be set above market price. NYSEIA recommends the ACP

should be set at a level 50% above the expected market price of RECs.

NYSEIA believes imported electricity should qualify for the CES if it meets certain requirements as proposed by Staff.

NYSEIA states that Utility-Owned Generation (*UOG) should be limited. NYSEIA believes that non-utility off takers and the "self-initiated" market should be able to grow alongside the CES. Self-initiated market be split between 1) LSEs, CCAs and merchant; and 2) large customers.

NYSEIA recommends that it would make sense for the CES to have an additional Tier 0 for existing renewable generation facilities that will not qualify for RECs under the CES, but will still be counted toward New York's renewable electricity goal. NYSEIA makes this recommendation because as the proposed tier structure is currently configures, there is a significant amount of existing renewable electricity generation that would not fit under the proposed Tier 2 for existing generation.

NYSEIA suggests that it be further clarified how LSEs will meet their annual renewable energy obligations by purchases of parts of these contracts from EDCs. Further, the Commission should consider a mechanism that requires a large portion of LSE REC purchases must be from EDCs.

NYSEIA views the long-term inclusion of behind the meter generation in the REC market as having the potential to complicate the ultimate transition to a Successor Tariff that fully and fairly values the benefits delivered by renewable energy generation because they would not want to create any confusion around RECs vs the valuation of the environmental and societal components of the Successor Tariff. NYSEIA states that RECs do not correspond closely to the true environmental and social value of energy generated and should not be used as a proxy for those components in the Successor Tariff if behind the meter generation is eligible for RECs.

New York State Department of Environmental Conservation (Department)

Initial

The Department recommends Alternative Compliance Payments (ACP) levels are adequate to cover the cost to the State of procuring an equivalent amount of renewable generation. That would avoid creating an incentive for a load serving entity (LSE) to opt to pay an ACP rather than procure renewable generation.

The Department believes that it is important that the public continues to pay for non-market, societal costs of pollution from fossil fuel generation, and the net cost will be higher the longer it takes to procure new, zero-emission generation.

The Department states that the Zero Emission Vehicle (ZEV) mandate commits the State to significantly increase the market for electric vehicles by 2025, which could result in a higher than expected demand for electricity in 2030. Hydrogen fuel cell vehicles can become a larger part of the ZEV market in New York. If a significant portion of the 2030 ZEV estimate is met with fuel cells, the Department believes this should lower the ZEV grid impact but increase natural gas needs regionally until renewable sources of hydrogen are available.

The Department believes that not all fuels derived from organic material (biomass or biogas) are neutral in terms of greenhouse gas emissions, and this should be considered as the Commission determines how to treat such fuels under the CES. The Department states that the Cost Study refers to the use of biomass fuels that are not eligible under the RPS. In developing the final CES, the Department believes it may be useful to provide more detail on the potential for additional fuels to be incorporated into the program beyond what is described in the White Paper. In addition, establishing a standard or guidelines based on lifecycle greenhouse gas emissions may be an appropriate approach.

New York State Department of State's Utility Intervention Unit (UIU)

Reply

UIU supports Staff's proposal to establish triennial reviews of the CES, with the caveat that the Commission should also perform interim assessments when necessary to prevent harm to ratepayers. UIU specifically recommends that an interim review be triggered where market indicators deviate more than 5% from targets. UIU agrees the regime should be described in the CES Implementation Plan, which, as Multiple Intervenors ("MI") correctly observes, should be made available for public comment prior to its finalization. UIU further agrees with NYSEG/RG&E and Central Hudson that the Implementation Plan should clearly identify the data that the Commission will collect and analyze as part of its CES reviews. Further, the data should include NYSERDA's and NYPA's forecasted and actual power purchase agreement ("PPA"), REC, and ZEC prices by tier and nature of resource. UIU agrees with MI and City of New York that the ACP

price should be reviewed at least triennially in order to accommodate shifting REC prices, energy prices, and system needs. UIU encourages the Commission to prioritize customer impacts in setting and re-setting the ACP. UIU agrees with the position of the New York University School of Law Institute for Policy Integrity ("Policy Integrity") that New York's ACP levels should not be set at a certain level just because neighboring states have set a similar level. UIU supports MI's suggestion that the Commission retain the flexibility to lower the ACP if the cost of CES compliance places an unacceptable burden on customers. UIU agrees with MI and NYC that all monies collected through the ACP should be returned to ratepayers. The Commission should tailor the refund of ACP monies to provide low-income customers with extra cushion against rate increases. UIU agrees with several parties discussed in their initial comments, energy efficiency will be key in helping load-serving entities ("LSEs") meet CES targets and recommends that the CES more formally incorporate energy efficiency targets, so long as such they are cost-effective compared to new renewable generation. UIU agrees with the City of New York's suggestion that energy efficiency measures be targeted to specific populations. UIU disagrees with NRDC's recommendation that the LSEs receive additional ratepayer-funded incentive payments for meeting energy efficiency targets. UIU disagrees with NRDC's recommendation that the LSEs receive additional ratepayer-funded incentive payments for meeting energy efficiency targets but rather, a negative incentive mechanism, which would require LSEs to credit monies back to ratepayers for missing efficiency targets, would be more appropriate.

New York State Economic Development Council (NYSEDC)

Initial

NYSEDC states that the CES should not jeopardize or impact the state's low cost powers programs.

NYSEDC states that NYPA is the most important and effective provider of economic development programs. NYSEDC states that the programs provides over 400,000 jobs in the states.

NYSEDC states that Commission has previously recognized the counterproductive impact of imposing surcharges mandated by RPS.

NYSEDC believes in rejecting the PSC inclusion of NYPA in the inclusion of the CES programs.

New York State Electric & Gas Corporation (NYSEG), Rochester Gas and Electric Corporation (RG&E), subsidiaries of Avangrid, Inc. and Central Hudson Gas & Electric Corporation (Central Hudson): (together "The Companies")

Initial

The Companies believe that electric LSEs should share the obligation of the CES mandate in proportion to their annual retail electricity sales or consumption and include microgrids that assume responsibility for serving customers within the microgrid in non-emergency circumstances. The Companies maintain the costs to achieve that goal should be paid equally and fairly by all New Yorkers through a "Central Procurement" model. The Companies observe that this framework would prevent the costs of RECs and/or ZECs and the administrative cost of CES compliance from varying among LSEs, and thereby avoid advantaging or disadvantaging individual LSEs and their customers. Further, any CES Implementation Plan should ensure compatibility with electric retail access in all its forms, including, for example, Community Choice Aggregation (CCA). The Companies advocate for a single, consistent cost recovery mechanism through the commodity charge. The Companies are concerned that there is a potential for customers to pay for the same benefits more than once through multiple REV initiatives. They advise rules and processes be put in place to ensure that retail customers pay only once for the societal or externality benefits. The Companies assert all resources to be counted toward the 50x30 goal should be registered with NYGATS and should be qualified at that time for the CES baseline or a specific CES tier. They believe RECs should be measured, not estimated and in the absence of metering, it may be necessary to rely upon estimates to produce RECs for NYGATS associated with energy consumed behind the meter and not exported to the grid.

The Companies support "Central Procurement" of RECs by NYSERDA and recommends that no individual LSEs be allowed to bypass the central procurement mechanism. The Companies cannot support PPAs executed by individual utilities unless the many serious risks are adequately addressed and the Commission maintains or puts into place strong safeguards consistent with PPAs in other states where PPA impact on utility credit metrics has been eliminated. Further, the Companies believe that the Staff White Paper proposal violates the principle of treating all LSEs equally, and the customers of all LSEs equally, by requiring that only EDC-related LSEs pursue bundled PPAs. If PPAs are found by the Commission to be necessary, then the Companies recommend that NYSERDA or NYPA conduct the procurements centrally and that NYPA be the counterparty to all

resulting contracts. The Companies favor the Tier 3 ZECs be centrally procured at the State level and the cost allocated among LSEs. The Companies states that the Alternative Compliance Mechanism (ACM) should be modified or replaced to ensure that it does not increase the cost to achieve the 50 x 30 goal. The Companies request that that the relationship between the voluntary green market and the 50 x 30 goal should be clarified. The Companies agree that only 2017-2019 target should be set at this time, with 2020 targets subject to confirmation during the first triennial review conducted during 2019.

Reply

The Companies have been persuaded that under the right circumstances, long-term contracts can be used to achieve the benefits associated with the 50x30 goal at the least cost. The Companies support central procurement by NYSERDA other than PPAs, as is necessary to ensure that all customers of all LSEs pay the same per-kWh price for the CES. The Companies opposes utilities as PPA counterparties and fully supports NYPA as the counterparty for all PPAs. The Companies support the “implied REC” approach for selecting successful projects recommended by REI and supported by EDP which would allow the actual bid prices to govern without pre-judgment and in the absence of perfect foresight concerning the most cost-effective combination of products. The Companies agree with IPPNY, Direct, the NYISO, and NRG that any products that negatively impact wholesale operations and interfere with wholesale price formation should be avoided. Further, the Companies agree with the IJU, EIA and EDF that UOG can be placed on a level playing field with other forms of long-term renewable commitments and included as a central procurement option.

The Companies disagree with IPPNY’s position that utility affiliates should be prohibited from owning generation in their affiliated utility footprint. The Companies states that various recommendations were made in initial comments for special tiers, however, setting fixed quotas for technologies to provide shelter from competition will not minimize costs. Allowing diverse resources to compete with one another will minimize costs and inevitably raise the cost to meet the 50x30 goal, and may do so quite significantly. The Companies argue the CES must recognize and accommodate the uncertainty of the level of energy efficiency that can reasonably be achieved and that electric load could rise significantly beyond levels considered in the Cost Study if the state more strongly emphasizes and incents electrification. In addition, the Companies state the amount (and particularly the timing) of DER available to meet the needs of Tier 1 remains unclear could impact either the demand or

supply factors that determine the conversion of percentage load to GWh targets, or the availability of supply to meet those targets. Also, this may significantly impact the potential to over- or under-achieve any particular year's CES annual targets to a greater degree than banking and borrowing or the short-term or spot market for RECs can accommodate. Various decisions within REV and REV-related proceedings could impact either the demand or supply factors that determine the conversion of percentage load to GWh targets, or the availability of supply to meet those targets, according to the Companies comments. National policy decisions that could significantly affect REC availability and price include tax credits, federal incentives, and the fate of initiatives such as the Clean Power Plan. The Companies point to the various parties, including the Companies that have repeatedly cited the "six cent law" as a cautionary experience in this proceeding, because the lessons from that experience are important and relevant. They believe the most complete and compelling example is the devastating experience of Niagara Mohawk Power Company and the Companies argue it is an important reason why the risk that long-term PPAs will prove over time to be unexpectedly costly should not be placed on individual utilities, and should rather be incurred at the state level and shared among all LSEs.

The Companies support eliminating the ACM will also eliminate the administrative issues and costs associated with developing and managing the payment infrastructure and the resulting revenues, both of which are likely to prove contentious. The Companies support the annual reporting proposed by Otsego. The Companies point out that residential and small commercial customers were not made exempt from paying for the Clean Energy Fund (including but not limited to the System Benefit Charge, Renewable Portfolio Standard and New York Sun grants), energy efficiency surcharges, net energy metering subsidies, and other initiatives that contribute to the success of REV and oppose any exemptions for the CES.

New York State Utility Labor Council, International Brotherhood of Electrical Workers Local 97, and Utility Workers Union of America, Local 1-2 (Collectively: Labor Coalition)

Initial

The Labor Coalition believes that based on the NYSERDA Options and Assessment Paper, over the long term of 20 years that the annual cost of electricity provided by utility owned generation would be among the lowest, if not the lowest cost over that period. The Labor Coalition points out that by

comments of Indicated Joint Utilities, the utility owned generation would retain the full asset value for New York customers and ensure that RECs are not sold out of State at contract expiration. Because of the emissions requirements of the EPS Clean Power Plan, the Labor Coalition believes that utilities should be allowed to compete in the market for the provision of Large-Scale Renewable projects through an ownership model. The Labor Coalition argues utility scale owned and provided renewable generation would yield the most cost-effective energy that would be produced under a Clean Energy Standard.

Reply

The Labor Coalition strongly disagrees with AGREE and NIRS opposition to the Commission's proposal for expedited payments to nuclear generators and believes that nuclear generators serve as a viable bridge that will facilitate New York in achieving its goals of 40% reduction in greenhouse gas emissions and 50% renewables by 2030. The Labor Coalition disagrees with the perception of RENEW that UOG's would unjustifiably place risk on ratepayers for possible UOG above-market costs. In addition, the Labor Coalition disagrees with RENEW's position that for Large Scale Renewables, New York should switch from the current NYSERDA budget-based REC procurement model to a target-based system solely of EDC contracting as found in several of the New England states. The Labor Coalition warns the Commission about supporting any long term EDC contracting that have the potential to result to what transpired under New York's infamous six cent law. The Labor Coalition disagrees with the Clean Energy Organizations Collaborative ("CEOC") that no potential subsidies for the State's ailing upstate nuclear fleet should cannibalize funds intended to support renewable energy and energy efficiency and that no funds should be diverted from existing funding pools such as SBC, RPS, CEF or RGGI. The Labor Coalition suggests that in the context of CES, utility ownership serves a particular social objective of facilitating the significant lowering of GHG emissions and utility-owned generation can serve as a correction to a potential failure of the market to develop sufficient levels of instate resources at the most cost-effective.

Northeast Clean Heat and Power Initiative (NECHPI)

Reply

NECHPI supports a rigorous, methodologically consistent standard for crediting resources under the Clean Energy Standard that accounts for the ability of a given resource type to reduce carbon emissions. NECHPI believes the Commission should

prescribe a process by which technologies would account for non-electric sector emissions avoidance, and receive an appropriate REC credit within the CES framework. NECHPI recommends that, rather than reach political decisions on the types of technologies that ought to qualify under the CES, the Commission should lay out an impartial framework that qualifies technologies based on their ability to offset emissions, including thermal credits that account for emissions outside of the electric sector.

Northeast Energy Efficiency Partnerships (NEEP)

Initial

NEEP disagrees with Staff's methodology to the load forecast stated in Appendix B. NEEP states that the NYISO Gold Book does include energy efficiency programs in its forecast. The Gold Book also explicitly details its projections for reductions in load requirements attributable to energy efficiency and other non-photovoltaic behind-the-meter generation.

NEEP states that Staff may have overestimated the savings achieved by NYPA and LIPA customers based on 2014 annual savings achieved by NYPA and LIPA customers as reported by the Energy Information Administration (EIA).

NEEP states that if annual incremental savings totals for these entities continue at the rate reported to the EIA, then the CES's methodology of assigning pro rata savings figures based on load assumes more than 300 GWh of annual incremental savings that may not materialize, altering many other assumptions relevant to load forecast and therefore cost impacts within the CES.

NEEP believes that the Commission can still mandate energy efficiency program through the Clean Energy Advisory Council, therefore preserving the CES's forecasted load reductions and associated methodologies for calculating costs and benefits.

NRG Energy, Inc. (NRG)

Initial

NRG supports the use of PPAs with EDC as off-takers of power or if necessary, a small allocation for REC-only procurements. NRG suggests full schedule of annual obligations is needed for certainty, with compliance obligations back loaded. NRG supports Staff's position that utility-owned renewable generation should not be allowed, as a rule, and only in 'exceptional circumstances.' NRG agrees the existing technology definitions included in Appendix C of the Whitepaper

are reasonable and should not be changed without full process and large-scale hydro should not be contemplated for eligibility to meet the CES. To secure a balanced portfolio of renewable resources, NRG recommends that the Commission consider a RPS carve-out for solar resources since solar has a number of unique benefits, including localized deployment, a production profile that typically follows peak load, silent operations, no moving parts, and zero emissions.

NRG argues that "Behind the Meter" (BTM) distributed renewable resources should be fully eligible, not only to be counted in the State's inventory, but to access the value of RECs through NYGATS, including SRECs, to the extent there is an additional solar carve-out. NRG suggests long-term contracts secured for RE facilities should not undermine the energy and capacity markets for merchant developers. NRG recommends that all associated CES compliance costs of distribution companies should be included in generation supply rates and all charges on customer bills associated with the CES should appear as an explicit line item to ensure fair competition between ESCOs and default service providers. NRG recommends the NYGATS as the single centralized registry, and that NYGATS be structured to work entirely as an electronic platform, to achieve the efficiencies and low administrative overhead. Further, NRG anticipates that NYSERDA will fill the role of the third party compliance administrator. In their comments, NRG states the ACP for Tier 1 and Tier 2A should be at least as high as the ACP in neighboring states, to ensure that there is not a structural bias for new and existing renewables to export their energy and attributes from NY to other states. Should the Commission adopts Staff's proposal for nuclear units, NRG argues it should be appropriately excluded from the actual CES, since it is primarily an economic development mechanism for the communities hosting certain nuclear generating plants.

Nucor Steel Auburn, Inc. (Nucor)

Initial

Nucor's chief concern is rate impacts upon customers because there is a need to effectively manage and mitigate customer impacts. Nucor believes in the need to foster economic growth and increase jobs, particularly, upstate, it is very important.

Nucor believes in a coherent nuclear policy must be crafted while recognizing the important functions that nuclear provides including no emissions, reliability, frequency and voltage control and positive economic impacts.

Nucor states that DER market penetration/renewables will not be able to match the loss of production of nuclear generators if they are taken off line. Nucor disagrees with the price supports in the form of contract for differences proposed by Staff for nuclear and this structure would be at odds with operation of wholesale markets.

Nucor believes that central purchase of large scale renewables should continue by NYSERDA or some other state entity. Nucor states that the LSE mandate should be rejected. Placing the mandate upon LSEs and forcing them to demonstrate compliance shifts recovery of Clean Energy Standard costs from EDC delivery rates to LSE energy charges, which can negatively affect customers. According to Nucor, the Staff White Paper states there are numerous alternative approaches in structuring a renewable energy standard but does not discuss any of them.

Nucor states that establishing an ACP on the basis of long-term REC prices is arbitrary because there are no reliable long-term REC price estimates beyond three years. The Staff proposal to set the Tier 1 ACP at a multiple of estimated long-term REC prices is punitive.

Reply

Nucor agrees with MI's comments that it would be counter-productive to design and implement a CES program that generates significant rate increases for New York's remaining energy intensive manufacturing customers. As the New York Power Authority (NYPA) similarly observed, NYPA has a statutory mission under the Public Authorities Law to provide low cost power to its municipal and energy intensive industrial customers. Nucor points outs that the Commission has repeatedly recognized with respect to the RPS program that precedes it, the CES must not be implemented in a manner that would subvert NYPA's mission or the Commission's parallel obligations under the PSL.

Nucor supports the Business Council's recommendations that the Commission require a more rigorous assessment of expected CES costs, and address the likely impacts on New York's energy intensive manufacturing.

Nucor states the CES White Paper and the Cost Study described two basic procurement paths of REC only contracts or long term purchase power and REC agreements (the latter referenced as combined "PPAs"). Commenters split along predictable lines on this issue, but Nucor states that although existing renewable project owners (Tier 2) may prefer a PPA approach, there is no showing of need for this mechanism for projects that are already financed, constructed and operational.

Nucor believes that NYISO certainly is correct that out-of-merit PPA contracts in the volumes required for CES will inevitably play havoc with the operation of power markets. The PPA approach would magnify that dilemma by artificially suppressing prices and require correspondingly larger ratepayer subsidies to preserve the operation of the upstate nuclear units. Several parties, including the City of New York, MI, and NYSEG, RG&E and Central Hudson addressed the fact that increased renewable resources will mean that transmission upgrades will be needed, which were explicitly excluded from the Cost Study. Nucor states that either the Commission, NYISO and stakeholders must work through these issues, or, as NYISO urges, the PPA approach is avoided except as a last resort. Nucor similarly urges the Commission to abandon the PPA approach.

Nucor believes the proposed alternative compliance payment (ACP) mechanisms are fundamentally flawed. For Tier 1 resources, the ACP should approximate the level of renewable externality benefit provided to New York to support the financing and construction of those facilities.

According to Nucor, as MI accurately observes, the White Paper erroneously suggests setting the Tier 1 ACP at a multiple of "the expected long-term REC Premium" when there is no rational basis for determining long term REC premiums, recognizes that project developers likely will "chase the highest revenue" RECs, urges the Commission to ensure that New York has the highest cost RECs available. As MI reasonably concludes, rather than setting in motion a "race to the top" in REC prices, the Commission should independently establish reasonable ACP caps to mitigate costs to New York consumers. Nucor further agrees with MI and the City of New York that all ACP payments should be refunded to ratepayers in order to hold overall CES costs to New York consumers in check.

According to Nucor, if there is to be a nuclear CES component, the Commission must establish a rational and economically sustainable program. In this regard, Nucor believes that the White Paper recommendations are close to the mark. Nucor agrees with Staff that an eligible nuclear facility must demonstrate that it is facing financial difficulty based on an examination of the facility's books and records. Also, since in seeking ZECs a nuclear unit is effectively requesting a cost of service based rate, its showing is not competitively sensitive, and should not be redacted from public view.

Nucor states that it is readily apparent that a NYSERDA-conducted procurement for ZECs is pointless when Staff must verify each unit's financial need, assess the level of price

supports required, and factor into account expected unit performance. Also, Nucor states that Staff is unquestionably correct in recommending that the price paid for each unit's ZEC's should be determined administratively by the Commission and updated every year based on unit-specific circumstances. In short, Tier 3 is only justified if it is treated as a necessary transitional measure that is regularly, and publicly, re-evaluated.

Nucor states that the Commission needs to reconcile its varied approaches in the REV, NY-SUN, and CES programs to accomplish its goals and avoid perverse incentives. The City of New York, which has stated its intention to purchase one hundred percent of its energy from renewable resources, also asserts that if it achieves this goal, should not also have to purchase any RECs or ZECs or make any ACPs. This demonstrates the disincentive that an entity would have from making more intensive investments. NYSEG, RG&E and Central Hudson also agree that the multiple incentives and revenue streams may result in customers paying more than once for a particular resource, which would be unjust and unreasonable. Nucor believes the Commission should address this fundamental misalignment affecting investment incentives.

Nucor states that the CES white paper ignores the need for firming power and securing reliable system operation, and according to Nucor, NYISO makes a compelling argument that system optimization needs are equally important for large scale renewable installations and that these concerns are best addressed through the existing planning, reliability and market mechanisms. Nucor believes that the CES program is incomplete unless these issues are fully taken into account by aligning renewable project investment and production with basic electric system needs.

Nuclear Energy Institute (NEI)

Reply

NEI believes that nuclear energy must be included within the overall Clean Energy Standard (CES) for two reasons: nuclear energy provided approximately 30 percent of New York's electricity in 2015 and nearly 60 percent of the State's zero-carbon electricity; and second, the CES nuclear tier will generate a net present value of $2.8 billion in benefits through 2030, according to DPS Staff's figures.

NEI states that New York's nuclear power plants operating in New York provide substantial amounts of baseload energy to the system, essentially a 24x7, 365-day basis, and are valuable resources for the State. As the City of New York and others

established, carbon-free energy is an important service that provides tangible value to the system without regard to other factors – location, status of their license renewal proceedings, financial situation, etc.

According to NEI, retiring even the single reactor at Ginna would undo all the benefit of the last decade's investments in the RPS program, and no party challenged this fact in their initial comments. And, New York's Clean Power Plan requirements would become more difficult – perhaps, impossible -- to meet if the State were moving so far in the wrong direction.

NEI states that, as noted by parties to this proceeding, if ZEC approach is implemented well and consistent with the wholesale market framework, these zero-emission credits could provide a sufficient inducement to sustain the operation of nuclear plants. Successful implementation will require that the costs of the nuclear facility are appropriately calculated and that the policy signals are reliable enough to support long-term investments at the plants.

NEI believes that a market-based mechanism will produce the most efficient and cost-effective structure and should be pursued. NEI urges the Commission to ensure that any framework adopted in this proceeding will provide for participation by all non-emitting resources on an equal footing.

oneGRID Corp. (oneGRID)

Initial

oneGRID expresses its support for New York's CES. oneGRID agrees with other stakeholders that the new CES should include some form of locational or deliverability requirement. Absent such a requirement, oneGRID believes that there is a risk that a surge in the development of upstate renewable resources will result in lower energy and capacity market prices in that region due, in part, to the demonstrated transmission congestion in the area. As a result of lower energy and capacity market revenues, the price for Renewable Energy Credits (RECs) could increase dramatically as renewable resources seek to earn sufficient revenues. The clustering of resource upstate could also lead to reliability issues and the curtailment of renewable generation. oneGrid believes that any locational requirement could be structured in a manner that is similar to the Locational Capacity Requirements in the NYISO capacity market, creating the proper price signal incentives to locate additional renewable resources. Creating a locational requirement that could be met though additional transmission development that benefits constrained regions, and greatly mitigate price risk, as well as

help address key reliability and deliverability issues across the State as the CES is implemented.

Onondaga County Legislator: Kevin Holmquist

Initial

Onondaga County Legislator, Keven Holmquist, supports the CES, and believes that continued operation of the upstate nuclear energy planets are vital to the economic and energy future of the State and our communities.

Operation Oswego County, Inc.

Initial

Operation Oswego County recognizes the critical role that nuclear power must play toward achieving the goals of the CES, and believes that nuclear power plants are essential to protecting our generation capacity and reliability. Operation Oswego County states that the Zero Emission Credits for nuclear generating facilities being proposed, would help to even the playing field whereby nuclear would be economically viable as generators of electricity as a carbon-free producer.

City of Oswego: William J. Barlow, Jr., Mayor

Initial

The City of Oswego supports the inclusion of nuclear generation in the CES, and the continued operation of the upstate nuclear energy plants, Ginna, FitzPatrick and Nine Mile Point, which have proven to operate safely, effectively and reliably. The City of Oswego state that upstate nuclear energy plants avoid 16 million tons of carbon emissions annually, which are estimated to be worth about $700 million in annual impact on the communities, which reflects the money saved in environmental and human health damages. Also, states that the upstate New York's three nuclear energy plants support 25,000 jobs, both directly and indirectly through the energy supply chain. The City of Oswego believes that, nuclear energy must be included in the final Clean Energy Standard in order for New York to be able to achieve the goals of the new standard.

Oswego County Legislator: Kevin L. Gardner, Chairman

Initial

Oswego County supports the CES, and states that families, communities and businesses in upstate New York depend on reliable electricity, jobs and clean air provided by these plants. Oswego County states that nuclear energy is carbon free and is key to moving New York to a clean energy future.

Therefore, it's imperative that New York adopt policies that help preserve these valuable assets.

Oswego County Legislator: Shane Broadwell, 17th District, Majority Leader

Initial

Oswego County Legislator, Shane Broadwell, supports the CES, and in particular the inclusion of nuclear generation in the CES, and the continued operation of the upstate nuclear plants like Ginna, FitzPatrick and Nine Mile Point. Shane Broadwell states that, upstate New York's three nuclear energy plants support 25,000 jobs - both directly and indirectly through the energy supply chain, and that these jobs pay well and have good benefits and opportunities for growth in the communities, and they are good for the communities and the families. Further adds that, nuclear energy is carbon free and is New York's largest source of zero emission electricity. Also, the County Legislator believes that nuclear energy is the most reliable source of zero-emission energy, providing clean electricity 24 hours a day, seven days a week through all weather conditions and the upstate nuclear facilities generally operate at 90% plus capacity factors year in and year out. Shane Broadwell requests to please ensure Ginna, Fitzpatrick and Nine Mile Point are able to remain open by including their clean energy contribution in the Clean Energy Standard.

Otego Microgrid Ratepayers (Otego)

Initial

Otego supports the program objectives outlined in the introduction of the CES White Paper, and states that the discussion by the Department Staff lacks logical internal coherence, reflects insufficient regulatory innovation, and inadvertently creates disincentives which will ultimately fail to achieve the targeted environmental objectives.

Otego states that, as proposed, the ZEC program is not market-driven and Staff admits that with only two ZEC generators, there cannot be a "market" and compensates by creating the Alternative Compliance Mechanism, a regulatory pricing mechanism that will decree a cap—or floor—on the ZEC "market". Otego believes that given the large percentage of total generation capacity supplied by New York's nuclear plants, decisions made on ZEC pricing will have an immense impact not just on the nuclear fleet, but on all the other portions of our generation fleet that are market-driven. Otego states that such an avoidable concentration of pricing power (in any hands,

public or private) is unwise from a market-focused public policy perspective.

Otego sees that creation and operation of the ZEC program would impose large administrative burdens on both DPS and the nuclear generators. Otego believes the ZEC program will no way support the construction of new renewable generation but in fact will be counter-productive.

Otego states that, as progress is made towards driving fossil fuels out of the energy marketplace, the ZEC program will become an obstacle to getting the nuclear power fleet shut down.

Otego believes that the ZEC program creates an open-ended subsidy program for the nuclear generation industry and recommends an alternative to the ZEC program such as direct tax on carbon. Also, Otego encourages for the Commission to investigate the implications of enacting a carbon tax, and the various mechanisms by which such a tax might be accomplished.

Reply

Otego supports the substitution of a carbon pricing mechanism for the ZEC program, with recognition that a short-term financial subsidy for nuclear generators may be necessary, and such a subsidy arrangement will be of a brief and definitively fixed duration.

Otego supports an aggressive pursuit of additional renewable generation and renewably-powered pumped storage, with the intent of making the nuclear generating fleet redundant as soon as possible.

Otego supports the frontloading of CES goals and especially offshore wind needs clear signals that renewable development will be supported in a huge scaling-up of investments in both generation capacity and supporting infrastructure.

Otego supports the inclusion of all off-grid and behind-the-meter generation under the CES mandates. Otego supports the primacy of the CES goals over considerations of affordability.

Otego agrees with the proposition that rapid development of intermittent renewables will increase the demand for and value of on-command generation; Otego disagrees, however, with the prediction that gas-fired generation will meet this need. New York has all of the necessary components for solar-powered pumped storage hydroelectric facilities in abundance: lots of steep terrain near lots of surface water near lots of open spaces.

Otego supports the incorporation of geothermal heat pumps and electric vehicles into the goals and calculations. Otego

supports energy storage technologies powered by renewable sources.

Otego does not support allowing utility ownership of large scale renewable generating facilities.

Otsego 2000 and Pepacton Institute (Otsego 2000)

Initial

Otsego 2000 support to stop burning fossil fuels for electricity. They believe that the efficiency improvement projections contained in the CES may be overly optimistic, and it could result in the inadequate provisioning of renewable resources. Appendix B supports the NYISO's forecast which assumes energy efficiency. However, Otsego 2000 notes the white paper does not specify what programs are being administered. Also, the set of qualifying electricity sources identified in Appendix C of the CES should be revised to eliminate sources that are not actually renewable, are not sustainably acquired, or that are significant greenhouse gas contributors.

Otsego 2000 believes that the CES should be designed to operate effectively through a robust system of Renewable Energy Credits (RECs) without over-reliance on Alternative Compliance Payments (ACPs). Also, provisions for the "borrowing" and "banking" of RECs should be balanced to ensure a dynamic functional market for the development of renewables.

Otsego 2000 supports a special "carve-out" for offshore wind as part of the REC program. They support the Tier 3 program for retaining existing nuclear power facilities in New York, provided that it is the most effective mechanism for limiting greenhouse gas emissions on an annual basis. Further, they support establishing robust mandates for efficiency improvement upon all utilities, with the potential for incentives only for efforts that exceed those mandates. Otsego 2000 believes that consideration should be given to additional support for Small Scale Renewables, including "behind the meter" projects in excess of the NY-SUN program. They state that New York should seek to reduce the emissions cap that applies within the Regional Greenhouse Gas Initiative (RGGI) and the 25 MW threshold. And, they believe that the State should develop a mechanism for performing an actual inventory of methane sources, using both "bottom-up" and "top-down" techniques supported by field verification. Otsego 2000 recommends that CES status report should be prepared annually with an accurate description of the State's total electricity portfolio with gigawatt-hours of generation from each source type (both renewable and non-renewable), including behind-the-meter sources. This should also include an account of imported electricity by source.

Plumbers & Pipefitters Local Union 112, Binghamton

Initial

The Plumbers & Pipefitters Local Union 112 support the CES, particularly, the inclusion of nuclear energy in the CES, and the recognition of nuclear power as a carbon free energy source. Moreover, they believe that upstate nuclear plants are vital to the State, and they provide tremendous economic, environmental and reliable energy benefits to New York families and communities. Ginna, FitzPatrick and Nine Mile Point are integral to the economic success of the State's clean energy future. These three nuclear plants in upstate New York support 25,000 jobs, contribute over $3 billion to New York's economy, $144 million in annual state and local taxes, and keep energy costs low as they generate about 15 percent of the State's energy supply. Without them, consumers would pay $1.7 billion annually in higher energy costs.

Plumbers & Steamfitters Local 73, Oswego

Initial

The Plumbers & Steamfitters Local 73 support the CES, with the inclusion of nuclear power. They represent over 500 members and their families that directly benefit from the nuclear power plants—Ginna, Nine Mile Point and FitzPatrick. The benefits are through lower taxes, good paying jobs and a reliable carbon free power source. Plumbers & Steamfitters Local 73 state that the three upstate plants support 25,000 jobs, generate $3 billion to New York's economy and contribute $144 million in annual state and local taxes. They believe that nuclear energy must play a big part for the State of New York, to achieve Governor Cuomo's objective of fifty percent carbon free power by 2030.

Port Authority of NY & NJ (Port Authority)

Initial

Port Authority supports the CES, and long-term carbon emissions reduction. They state that in March 2008, the Port Authority's Board of Commissioners adopted a policy of reducing Greenhouse Gas emissions by 80% by 2050. Port Authority believes that the Biomass Power Guide needs to be reviewed and modified to promote capital and operating efficiencies, including elimination of long distance waste transport.

Poseidon Transmission 1, LLC (Poseidon)

Initial

Poseidon urges the Commission to take steps to initiate the Public Policy Transmission Planning Process under Attachment Y

to the NYISO Open Access Transmission Tariff in order to seek proposals to build new transmission links to neighboring regions, for the purpose of providing firm transmission to out of state suppliers and in State buyers of renewable power that qualifies for inclusion in New York's Clean Energy Standard. Also, Poseidon states that, to enable out-of-state resources to compete in meeting the 50 by 30 goal, new transmission linking New York to neighboring regions will be required. Poseidon further urges the Commission to identify in adding transmission intertie capacity to neighboring regions as a public policy requirement and initiate the Public Policy Transmission Planning Process as soon as possible.

Reply

In the reply comments, Poseidon is encouraged by the broad support for out-of-state renewable resources to be eligible revealed in comments by of other parties, including the New York Power Authority (NYPA) and the New York Independent System Operator.

Poseidon urges the Commission to adopt eligibility requirements that do not require actual physical delivery of the electricity actually produced by out-of-state renewable resources.

Poseidon supports NYPA's comment that "Capacity should not be required for an out-of-state resource to qualify" (NYPA April 22, 2016 Comments at p. 11, note 26). The commodity at issue in a program promoting use of renewable energy is, by definition, energy and not capacity. A requirement that an out-of-state source be supported by generating capacity would be needlessly onerous and counterproductive.

PosiGen Solar Solutions (PosiGen)

Initial

PosiGen adamantly supports Governor Cuomo's plan to achieve 50% renewables by 2030 and the Commission's proposal to adopt the Clean Energy Standard ("CES"). PosiGen looks forward to participating in the process to create a program that provides clean, renewable energy to all New York consumers, including low-to-moderate income ("LMI") ratepayers.

PosiGen believes that the Commission should ensure LMI communities and households are adequately included and represented in the CES. The Commission should also investigate how other state and federal programs are incorporating LMI households in clean energy initiatives, and adopt similar

approaches that give enhanced value to Renewable Energy Credits ("RECs") generated from LMI communities.

PosiGen strongly supports the outcome objectives outlined in the White Paper, including objectives to create behind-the-meter solutions, promote new market models that encourage and incent individual consumers in order to accelerate and exceed the 50 by 30 goal, and provide solutions to all consumers to ensure no consumer class is left behind.

PosiGen encourages the Commission to ensure that any CES includes meaningful participation by the LMI community. While the structure of the proposed CES provides an appropriate market-based mechanism to generate development and maintenance of renewable resources, it is imperative that the LMI population not be left out of the equation.

PosiGen strongly supports the conclusion in the Cost Study that state energy efficiency programs will be crucial to reducing electric consumption and therefore the overall cost of the CES program. In addition to helping the state meet its 50 by 30 goals by reducing the total energy consumed, energy efficiency programs bring value-added environmental, health, economic, and reliability benefits, all of which are critically important in LMI areas.

PosiGen states that in order to ensure that the LMI populace is included in the renewable/clean energy boom and marketplace, the Commission should focus on greater penetration into the LMI consumer demographic, particularly with regards to access to solar products, financing, and energy efficiency programs. With over 35,000 residential solar installations in New York, and only 29 approved for lower income households, both NYSERDA and the Commission need to ensure that all appropriate efforts are made to make LMI participation easier, not more cumbersome.

PosiGen concurs with the Commission's overall approach to allow alternate compliance through payment of an Alternative Compliance Payment ("ACP"). However, the Commission should set the ACP sufficiently high or develop market-mechanisms to ensure that the ACP is not over-used in lieu of purchases of RECs. Otherwise, excessive use of the ACP as a compliance mechanism could prevent attainment of the overall goal as well as potentially limit the participation of LMI, particularly if credit multipliers are used for LMI RECs or additional value is otherwise placed on the LMI service attribute.

PosiGen recommends that the Commission use ACP payments to ensure that LMI populations and communities are included in the program. PosiGen also requests that a portion of ACP funds be

specifically earmarked for targeting LMI communities. Alternatively, the disposition of funds should expressly include reference to use of funds for LMI ratepayers, however the proceeds are used.

PosiGen states that the White Paper referenced that the CES program could include greater REC value for certain attributes, as is recognized in other states. In Massachusetts, solar RECs ("SRECs") are valued higher for generation units that provide all of their generation to LMI housing as compared to other generation attributes, such as the development of Brownfields. In a similar vein, the federal Clean Power Plan provides a credit multiplier of two Emission Rate Credits ("ERCs") for everyone one MWh of avoided generation through demand-side energy efficiency projects implemented in low-income communities. PosiGen believes that these same principles should be considered in New York to impart greater value to RECs that are generated from LMI communities.

PosiGen believes that triennial reviews should include evaluation of whether and to what extent the LMI community is successfully being served through the CES, ensuring LMI is being served, including adjustments to credit multipliers.

Poseidon Transmission

Initial

Poseidon agrees with NYPA and NYISO recommending the Commission to adopt eligibility requirements that do not require actual physical delivery of the electricity actually produced by out-of-state renewable resources. Poseidon supports NYPA's comment that "Capacity should not be required for an out-of-state resource to qualify" (NYPA April 22, 2016 Comments at p. 11, note 26). The commodity at issue in a program promoting use of renewable energy is, by definition, energy and not capacity. A requirement that an out-of-state source be supported by generating capacity would be needlessly onerous and counterproductive.

PSEG Long Island (PSEG LI)

Initial

PSEG LI supports the recommendation that LSEs are given flexibility to demonstrate their ability to comply with CES renewable energy requirements, based on RECs purchased directly from generators, through intermediaries, or via self-supply. The flexibility to self-supply is fundamentally important for entities like the Authority that have actively undertaken initiatives to meet RPS targets through bilateral contracts.

PSEG LI recommends that net reductions in emissions realized by the use of electric vehicles or geothermal technology should be translated into RECs, and usable as an offset to the additional compliance obligation from the incremental electricity sales.

PSEG LI believes that the ACP for each tier should be set annually instead of every 3 – 5 years. Reviews of the ACP valuation on an annual basis helps balance the valuation of RECs which will be done on an annual basis as well. PSEG LI further recommends annual ACP valuation process be administered by NYSERDA.

PSEG LI states that the Commission should define resource eligibility under Tiers 2A and 2B more clearly, and supports ownership of renewable resources by public power entities and municipalities because they generally have a lower cost of capital when compared with most competitive businesses.

Recurrent Energy (Recurrent)

Initial

Recurrent supports Solar Energy Industries Association's (SEIA) position that 20-year or similarly long-term bundled PPAs offer the least expensive market tested option for driving the development of a large-scale solar market in New York State. PPAs also provide market certainty, reduce developer risk and financing costs, and ultimately provide better value to offtakers and ratepayers.

Recurrent supports SEIA's position that the State of New York should seek to maximize the likelihood that there will in fact be an offtake market for large-scale solar projects. Recurrent believes that it is in the best interest of New York State ratepayers to accelerate the development of a robust utility-scale solar pipeline in time to maximize the ability of developers to qualify for the 30% investment tax credit (ITC).

Recurrent supports SEIA's position that resource-specific sub-tiers offer a reliable means of driving technology or attribute-specific deployment within a renewable mandate. Recurrent states that the Commission could seek to value renewable resources through other market mechanisms that take into account the value of a resources' attributes, such as Time of Day and Time of Use rates. Recurrent supports California's Renewable Auction Model "RAM".

Recurrent supports SEIA's position that Utility Owned Generation (UOG) should only be permitted under narrow circumstances where it is demonstrated that a market need exists

that cannot otherwise be met through the competitive marketplace.

Recurrent states that the current interconnection study process delays development of projects under the CES. The Large Facility Interconnection Procedures (LFIP) do not provide schedule or pricing certainty to developers. Providing more certainty and shorter duration around the interconnection process for generators greater than 20 MW, or alternatively conducting serial interconnection studies, would allow developers to efficiently and economically bring on new renewable generation.

Recurrent recently commissioned the Smart Electric Power Alliance (SEPA) to conduct a study on how to optimize the economics of utility-scale solar projects. Recurrent indicates some of the key findings from the report as large scale projects can achieve significant economies of scale across soft cost categories compared to small projects and the greatest economies of scale are achieved as solar projects sizes increase from 5 to 20 MW, with significant additional savings available until projects reach the 50 MW range. Additionally, above 50 MW some additional economies of scale may be gained, but at diminishing levels.

Reply

Recurrent Energy agrees with many commenters on the superiority of bundled, long-term PPAs. PPAs.

Recurrent Energy agrees with many interveners on the need for a standardized schedule for procurement, and strongly recommends that solicitations begin as soon as possible in order to maximize the volume of megawatts that will be eligible for the 30% federal investment tax credit.

Recurrent Energy believes that the goals of the CES are more likely to be met if awardees are required to complete construction of their proposed projects within 36 months of securing a contract. A time limit of this duration provides a filter for determining the capability of a developer to deliver on their commitments and discourages speculative bids.

Recurrent Energy recommends that requests for proposals (RFPs) be released every six months instead of annual solicitations.

Recurrent Energy shares NYISO’s expectation that technical studies will confirm the need for additional transmission infrastructure and system upgrades beyond what is contemplated by the Western New York Public Policy Transmission Need and the Alternating Current Public Policy Transmission.

ReEnergy Holdings LLC (ReEnergy)

Initial

ReEnergy supports the CES proposed Tier 2A and Tier 2B categories, and the proposed GWh target for Tier 2A, and in favor of the separate sub-tiers in Tier 2. Believes that long-term contacts should not be restricted to Tier 1 projects.

ReEnergy states that the mechanism to establish the Alternative Compliance Payment (ACP) will be critically important to achieve the State's renewable energy goals and believes it will be necessary for the ACP to be sufficiently high in order to encourage competition with adjacent marketplaces, particularly, the states of Massachusetts and Connecticut.

ReEnergy supports Appendix D of the White Paper, which has properly identified the critical component for ACP formation for Tier 1 resources. They argue that the formation of the ACP should be applied in Tier 2A as well, since Tier 2A resources have full capability to deliver to other state Class I markets, any artificially low ACP would run the risk of a shortfall in New York RECs.

ReEnergy believes that the concept outlined in Appendix D of the White Paper for Tier 2A ACP formation is flawed. Setting the ACP higher than current forecasts allows for full competition to occur and limits the potential for REC shortfall in New York. If the ACP were to be set at current forecasted level (for example, the $25.75 rate mentioned in the cost study example), ReEnergy fears New York runs the risk of procuring no RECs from Tier 2A projects.

RENEW Northeast, Inc. (RENEW)

Initial

RENEW proposes that the proposed Tier 2 (both Tier 2A and Tier 2B) be designed to be similar to the Massachusetts RPS Class II. As part of design of the Tier 2, RENEW recommends (1) long-term contracting opportunities with these resources to capture the hedging benefits of these "fuel-free" resources; and (2) opportunities for the state to facilitate development of a voluntary market for the attributes these legacy resources.

RENEW recommends NYSERDA continue to conduct state-wide aggregated competitive solicitations.

RENEW supports Offshore Wind, with long-term contracts, and a procurement at scale over 1,000 MWs, to achieve economies of scale infrastructure and local supply chain investment. Also, recommends multiple solicitations over a number of years because

it would enhance competition and ensure the State's offshore wind program is not dependent on just one company or project.

RENEW opposes a change in the State energy policy to allow utility owned generation (UOG) (Option 3B) as it will unjustifiably place the risk on ratepayers for possible UOG above-market costs.

Reply

RENEW believes that option 3A, as modified, should be the only procurement approach with none of the other options adopted even if in a limited or transition format. Retaining the existing model of REC-only procurements (Option 1) in parallel with another model as a transition adds unnecessary administrative and compliance complexity.

RENEW disagrees with Indicated Joint Utilities claim the Utility Owned Generation (UOG) model is the least-cost path apparently based on the hypothesis that consumers would not pay a premium for renewable energy as they would after the end of a long-term contract. Further, RENEW believes that their assertion is based solely on an unpublished analysis Con Edison conducted and no other public evidence in this case. RENEW supports IPPNY's initial comments that if EDCs are allowed to develop or acquire an interest in cost-of-service, rate-regulated LSR, ratepayers ultimately will be put back in the position of being at risk of shouldering the cost overruns of such projects.

RENEW opposes changing state energy policy away from competitive wholesale markets to allow for UOG (Option 3B) and unjustifiably placing the risk on ratepayers for possible UOG above-market costs.

RENEW argues that the Indicated Joint Utilities give a false impression on the workings of the PPA for bundled energy and RECs and they imply the LSR owner has no incentive to maximize participation in the energy market as it will receive a fixed hourly rate. RENEW states in reality, under a PPA, the interests of the LSR owner and consumers are aligned under the objective of maximizing the output of renewable energy production.

RENEW states that the Indicated Joint Utilities comment that new Financial Accounting Standards Board guidance regarding the treatment of operating leases may result in utilities having to characterize the PPA as a lease. The revised lease accounting model, though, does not require EDC contracts with renewable energy plants to be treated as a lease and under the PPA model, the contracts will not be reflected on a utility balance sheet as debt.

RENEW recommends a centralized procurement model under which none of the EDCs would have a right to substantially all of the value from a renewable energy plant. Under the RENEW model, once the winning bidders are selected, NYSERDA would have the authority to direct the EDCs to enter into contracts with the winning bidders for their proportionate share of the products sold by the projects based on their relative distribution loads.

RENEW believes that even if one EDC were to contract for the entire output of a renewable energy plant, the PPA still would not qualify as a lease. The PPA structure proposed provides for the buyer to purchase the output of a renewable energy plant whenever it can be produced at a price that is fixed per unit of energy delivered. For these reasons, the concerns of the Indicated Joint Utilities that PPAs may need to be treated as leases and will be imputed as debt on their balance sheet are without merit.

RENEW finds that the power of competition best addresses the question of how to give consumers the benefits of residual value. The Indicated Joint Utilities imply that developers will reap an ill-gotten benefit at the end of the PPA. RENEW states that the implication underestimates greatly how savage the power of competition can be in these competitive procurements.

RENEW argues the Indicated Joint Utilities characterize PPAs as “only the beginning of ongoing payments that will need to be paid to existing resources to keep renewable attributes in New York as long-term contracts expire.” RENEW states that this comment ignores the fact that under the UOG model ratepayers will also pay for the O&M of a utility owned renewable energy unit in its later years and a merchant operator, however, cannot stick ratepayers for poor performance costs like a rate-based one.

While RENEW supports first the EDC-backed PPA model for contracting of renewable energy based on its cost-effectiveness, it believes the proposal advanced by Avangrid that places the New York Power Authority (NYPA) in the role as the counterparty to developers might also work. RENEW believes NYSERDA would need to have a key role in the selection process. Otherwise, RENEW supports the Avangrid proposal with NYPA as the counterparty to energy that it will sell into the NYISO markets and the RECs that be allocated to all LSEs based on their share of load. RENEW agrees with Avangrid that further exploration of NYPA’s legal authority should be conducted.

In the interest of promoting competition, as proposed by NYPA and Brookfield Renewable Energy Group, RENEW supports

consolidation of sub-tiers 2A and 2B into a single Tier 2. Additionally, RENEW supports an exploration of whether long-term contracting for Tier 2 resources should be conducted as contract durations of 5 to 20 years may provide revenue certainty that allows for ongoing maintenance and optimization of existing projects.

RENEW states that long-term PPAs are compatible with New York's wholesale energy markets and will lower energy production costs. The comments of IPPNY and the New York Independent System Operator, Inc. (NYISO) on LSR bidding into NYISO markets assert that EDC-backed PPAs are incompatible with New York's wholesale energy market. Their remarks ignore the fact that short term markets are not the only energy markets. However, RENEW suggests adding a long-term fixed energy component in contracts will provide consumers with the full benefits of renewable energy whose "free fuel" can allow a supplier to offer a long-term hedge against electricity price swings caused by the volatility in natural gas and other fossil fuel markets. RENEW agrees with the NYISO and IPPNY that competitive wholesale markets have numerous benefits to consumers. It disagrees with them on the point that long-term PPAs are incompatible with the wholesale markets. The NYISO states that long-term PPAs will "insulate renewable resources from temporal and location-based wholesale market price signals".

RENEW does agree with the NYISO that additional low marginal cost renewable resources will negatively affect "the ability to accommodate the deliverability of the total output from the State's wind and hydroelectric resources to the system." The solution to this dilemma is not to block a program of long-term PPAs for LSRs but to upgrade the bulk transmission system to enable upstate projects to provide renewable and low cost energy to downstate zones with greater demand.

Renewable Energy Industry: The Alliance for Clean Energy New York, American Wind Energy Association, Advanced Energy Economy Institute, Northeast Clean Energy Council, and Distributed Wind Energy Association: (Collectively, Renewable Energy Industry)

Initial

Renewable Energy Industry (REI) strongly supports the New York State's pursuit of a new Clean Energy Standard (CES) to achieve 50% renewable energy by 2030.

REI notes that the White Paper leaves several critical policy design questions undecided. REI supports the establishment of annual procurement obligations in megawatt-hours (MWh), but the White Paper only establishes these until

2020, which is not long enough to stimulate a strong pipeline of projects.

REI is concerned about the White Paper not establishing the level of the ACP nor the specific methodology for setting the ACP, so its efficacy in achieving the 50% goal cannot yet be assessed. Also, the REI states that the White Paper does not articulate what portion of the overall obligation would be procured via electric distribution company (EDC) backed PPAs. REI proposes that the EDC-back PPA portion of the total CES Tier 1 obligation should be 85%. The remaining portion of the obligation should be achieved via NYSERDA long-term REC contracts, distributed generation supported by co-incentives, and the short-term REC market. REI notes that some aggregated behind the meter generation could be procured via EDC-backed PPAs. Renewable Energy Industry's proposal is that an amount equal to 85% of the total Tier 1 obligation be procured via EDC-backed PPAs and this 85% would be allocated to the EDCs as well as NYPA and LIPA, based on the load served.

REI supports the broad definition of renewables as described in Appendix C of the White Paper, with the exception of hydropower greater than 50 MW and/or involving new impoundments. REI also supports the use of an offshore wind tier in the CES, and an annual target should be set for energy efficiency.

REI Industry opposes unrestricted utility-owned generation (UOG) of large scale renewables, and supports the restrictions on UOG as articulated in the White Paper.

REI believes that targets and timelines should be established. Primary concern is lack of targets after 2020 and the apparent back-loading of targets relative to a smooth pathway to 50% by 2030. Renewable Energy Industry believes that firm targets should be set for each tier for the period of 2017-2030, and that the triennial review does not create certainty. Also, REI states that since energy efficiency was factored into the 2030 load projections, an annual target should be set for energy efficiency. REI states that a solicitation schedule with MWhs targets should be established by the Commission and should apply to EDCs including NYPA and LIPA. Also, New York needs to structure its CES to maximize benefits from federal tax credits which are decrease over time Procurement to meet CES should be timed to maximize potential PTC and ITC benefits by front-loading in the years 2016-2019.

REI believes in establishing Utility-Backed PPAs as the core of the CES. They strongly caution against relying on short-term or spot REC market, as it will highly unlikely result

in in-state renewable projects. Renewable Energy Industry notes that Tier 2 should have the opportunity for long term contracts.

REI recommends in establishing an effective alternative compliance mechanism (ACP) Level. The ACP should be high enough to stimulate REC procurement in Tiers 1 and 2, for example at a level twice the projected REC price. Renewable Energy Industry supports review of the ACP level every three to five years – changes should be gradual and moderate, and ACP revenues should be directed to NYSERDA for the procurement of RECs via long-term contracts.

REI states that to use the “implied REC” approach to evaluate project bids. Also, they state to create a CES program that emphasizes locational value and resources diversity to assure a more predictable level of renewable energy output while optimizing use of the transmission and distribution structure.

REI supports establishing Tiers for offshore wind and maintaining existing renewables in New York. Renewable Energy Industry believes that offshore wind tier is highly scalable and reliable; offshore wind projects require bundled PPAs like other large scale renewable technologies because the CES program is going to integrate NYPA and LIPA rather than have separate policy; and offshore wind tier will create demand and lead to pipeline of projects.

REI believes that expedited implementation of a CES is necessary to all the continued operation of the nuclear facilities but certain existing renewable energy facilities. Renewable Energy Industry does not support hydropower larger than 50 MW in Tier 1 or Tier 2. Also, believes that many projects currently are Main Tier or Maintenance Tier and substantial remaining operating life and in the state’s interest to keep the energy and REC’s in the state. Further, Tier 2 projects should be eligible for long term contracts. Nuclear facilities should not count towards New York’s 50 by 30 goal or LSE’s obligations towards the goal.

REI states to include new distributed renewable in Tier 1, and integrate CES with REV. Also supports inclusion of qualified distributed energy resources in Tier 1 as proposed by Staff. Further agrees with Staff that qualifying DER does not need a separate tier within the CES, and DERs will sell/market RECs to obligated parties or their distributed utility.

REI supports establishing mandatory energy efficiency target for utilities, either as part of the CES or complementary program and should aim for 2% annually.

REI supports limited banking and borrowing recognizing the values in smoothing compliance and volatility in the REC markets. RECs would be allowed to be banked for 2 years. RECs could be borrowed for 2 quarters from operational projects. Renewable Energy Industry opposes to utility-owned generation.

REI believes that increased proliferation of electric vehicles and geothermal heat pumps will support a lower of economy wide greenhouse gas emissions. Thus, it is appropriate to include some projected increase in the electricity demand due to these technologies, but the increased load does not require the annual percentage in the CES be modified. REI states that robust deployment of these technologies could affect an energy efficiency mandate, should one be established. Therefore, the design of an energy efficiency mandate should take into consideration of this potential dynamic so not to penalize an obligated entity that fails to achieve efficiency targets due to these technologies, but instead adjusts its efficiency obligation accordingly.

Reply

Both the REI and the utilities generally support utilization of a competitive procurement process, regular resource solicitations, and the inclusion of all jurisdictional and non-jurisdictional load-serving entities (LSEs) in the CES.

The REI agrees with the utility filings on the need to ensure appropriate cost recovery and the use of NYGATS to track the generation of renewable energy credits (RECs), as well as the need for clarity in the ownership of RECs (particularly from distributed technologies).

The REI agrees with the utilities in support of the continued development of voluntary market activity in renewables procurement, as part of a portfolio of procurement approaches to achieving 50%.

As described in the REI’s Initial Comments, they recognize that utility-backed PPAs are a tried and true procurement structure that can accelerate renewables development activity to the scale necessary to achieve the 50% goal, and can do so at least-cost, as borne out in the LSR Options Paper and the CES White Paper Cost Study. They favor a PPA approach can be implemented in a manner that is fully consistent with competitive wholesale markets and federal law, and consistent with existing restrictions on utility-ownership of generation assets.

REI disagrees with the Initial Comments of the NYISO and IPPNY that raise a number of concerns about the use of bundled

PPAs and compatibility with competitive markets, stating the concern that PPAs will insulate renewable generators from price signals and create inefficiencies in the market, even threatening reliability by undermining revenue adequacy for resources necessary to balance renewable energy variability.

REI recommends that in evaluating competitive bids, the entities making procurement decisions could use an "implied REC" approach in order to maintain market signals related to location and time of generation as a key aspect of a procurement model.

REI states that transmission investments, as NYISO points out in their Initial Comments will be necessary to meet the 50% by 2030 goal, and should accrue co-benefits of less congestion and more reliability. The Renewable Energy Industry also recognizes and supports the need for additional transmission investment.

REI writes that NYISO's Locational Based Marginal Pricing ("LBMP") system was implemented after the State's power plants had already achieved capital recovery through vertically integrated guaranteed rates of return. Therefore, existing, conventional generators did not need long-term incentive structures to ensure capital recovery. As a result, LBMP has been extremely effective at encouraging existing power plants to maximize their efficiency and reduce variable costs, leading to savings for the State's electricity consumers.

REI states that the Solar Parties argue about smaller scale competitive procurements for renewables, and that it could potentially provide more accurate price signals to meet system needs. The Solar Parties cited California's Renewable Auction Mechanism (RAM) or procurement models in Massachusetts and Connecticut as examples of effective efforts. Since 2010, California's RAM effort, for example, helped procure more than 1.5 GW of renewable generation through PPAs. Aimed at resources between 3-20 megawatts, investor owned utilities hold two technology neutral auctions per year based on meeting their specific system needs.

REI disagrees with several commenters, including the utilities that support continuation of the NYSERDA REC-only contracting structure, with costs collected via a surcharge. REI does not believe the REC-only contracts do not bring the long-term price stability value of renewable energy generation to the ratepayers, and will not achieve policy goals at least cost, if at all.

REI disagrees with several commenters that raised issues of risk shifting in a PPA procurement model, citing unacceptable

risks and excessive costs, even though the State's analysis in this proceeding has shown the opposite: lower costs.

REI states that despite analysis in the LSR Options Paper and the CES White Paper Cost Study that showed lower gross costs and higher net benefits for PPAs vs. REC-only long-term contracting, several parties raise issues related to the cost risk of PPAs. REI believes the unbundled REC product is not inherently less risky for electricity consumers than a long-term bundled PPA and, in fact, only a long-term fixed product can really protect electricity consumers from electricity price fluctuations.

REI write that, several commenters assert that entering into PPA's under the CES would put utilities in the same situation as New York has experienced in the past under the "Six-Cent Law. REI supports a new 50% CES designed to have renewable energy developers competing to achieve the least cost. A procurement entity, such as joint utilities or a third party, would be evaluating and selecting competing bids based on pre-established criteria, which could potentially include other factors (e.g. local economic development benefits) but most certainly would focus on least cost. The PPA requirement will also be limited in size.

REI notes that in the Initial Comments of the Entergy Entities writes: "Adopting a market-based CES program is further warranted in light of the United States Supreme Court's decision in Hughes. et al. REI perceives this as a misreading of the holding in *Hughes*, which the Court narrowly limited to the specific type of contract for differences established by the State of Maryland in the case. REI believes there is nothing in the DPS Staff CES White Paper suggests the type of "bid-and-clear" requirement that was pre-empted in *Hughes*.

REI writes that, Entergy's comments argue for a single CES approach rather than the tiered approach proposed in the White Paper, as well as a structure that is unbundled from energy in some form. The primary problem with this approach is that it will undoubtedly be substantially more costly than the White Paper proposal. The "clean energy credits" that Entergy is recommending would be priced at the marginal value of credits, thereby providing higher REC payments than necessary to nuclear plants and increasing the cost of the CES program. The tier approach is an elegant structure for achieving several policy goals at least cost. This includes keeping existing renewable energy generators to the New York market (Tier 2) and overcoming barriers to the establishment of a new industry with significant development potential (offshore wind tier).

REI supports an offshore wind tier that could successfully attract the offshore wind industry to New York State to create jobs, promote renewable energy development for the downstate region, and assist in achieving the 50% mandate. Support for offshore wind was articulated in comments by NYPA, the City of New York (“City”), and the Clean Energy Organizations Collaborative (CEOC).

REI believes that the need for new capacity is most relevant downstate, in New York City and Long Island. Geographic and transmission constraints currently limit the ability to develop onshore wind and utility-scale solar to serve this need. In their comments, the City also raised concerns about geographic equity.

REI states that the City encourages the Commission to consider the creation of twin mandates for renewable energy resources and energy efficiency in their comments. Utilities also agree that aggressive investment in energy efficiency is needed to mitigate the cost impact of the 50% by 2030 goal. They concur with the arguments advanced by the City and agree that the Commission should establish a successor to the Energy Efficiency Portfolio Standard and make targeted investments in energy efficiency to reduce the burdens of energy bills of low-income New Yorkers.

REI agrees with MI that the Commission should conduct analysis regarding the role that efficiency can play in bringing down the CES cost. REI disagrees with MI recommendation of the initial target toward the 50% by 2030 goal should become effective in 2018, not 2017. They go on to recommend the establishment of subsequent CES targets to be set in 2021, 2024, 2027 and 2030. They argue that an additional year before implementation of binding targets will allow time for further analysis and study. REI encourages the Commission instead to move forward with the timeline proposed in the Staff White Paper.

REI disagrees with MI’s s suggestion that a delay in implementation would allow wholesale power prices to rebound and decrease the need for subsidy is neither supported nor productive. REI argues front-loading procurement solicitations under the CES will allow New York to maximize the benefit from these tax policies and it is a clear and convincing argument for holding the first CES procurement process in 2017.

REI disagrees with the comments of MI on establishing future CES targets upon a subsequent stage of the proceeding. They strongly recommend that the Commission set annual compliance targets out to 2030 with the option to review targets

as needed, rather than setting the goals every three years. REI's Initial Comments supported the triennial review of targets, but in the context of annual targets being established at the start of the program and criteria articulated regarding what would cause the targets to be adjusted either upwards or downwards. The triennial review period offers the chance to make targeted adjustments if needed.

REI states that the utility filings support a CES program in which all jurisdictional LSE's (EDC's, municipalities, ESCOs) and non-jurisdictional LSE's (NYPA, LIPA, Co-ops, direct NYISO customers) share the CES obligation, as a fundamental principal. The renewable energy industry shares this position. While we recognize the jurisdictional issues with LIPA and NYPA, REI encourages the Commission to request a proposal from LIPA and NYPA on how these entities will design and implement their own CES program that is fully consistent and well integrated with the CES to be established by the Commission in June for jurisdictional LSEs.

REI is concerned that, in the absence of a binding commitment on the part of LIPA, Long Island will continue to underperform as compared to the rest of the State in the development of large-scale renewables.

REI states that numerous commenters aligned with our Initial Comments in opposition to utility ownership of generation ("UOG"). These commenters cited similar concerns with vertical market power, the potential for utility bias, the need for more oversight, and the difficulties in comparing bids for UOG to bids for PPAs. REI agrees with these commenters that it would be extremely difficult to adequately overcome these issues and fairly level the playing field between UOG and independent power producers. IPPNY shares our position that UOG would not bring benefits to ratepayers, and shares concerns given that New York State's electricity markets preclude generation ownership by electric distribution utilities. Allowing UOG of large-scale renewables would backtrack on New York's progress in developing competitive markets and would set an unjustified, uncompetitive, and potentially harmful precedent. In contrast, utilities propose utilizing UOG as part of a multi-faceted strategy to meet the 50% goal, termed "universal renewables." Further, the utilities do not offer evidence that this approach will be more affordable or less risky for ratepayers, who ostensibly would have to pay for these assets in the rate-base as well as cover additional expenses for higher-than-expected operation and maintenance costs or underperformance.

REI believes that PPAs provide more certainty and more possibilities to developers than a REC-only approach combined with the voluntary market and UOG when they embark on the risky and costly task of developing projects in New York. The Renewable Energy Industry states that the utilities expect that UOG "will save 38% compared to bundled PPAs," likely because the utilities are significantly underestimating the real cost to develop projects in New York, and are comparing a 20 year PPA with a 25 to 30-year project life under UOG (for fair comparisons the durations should be the same). REI does not support utility ownership of generation assets. Further, the "universal renewables" approach outlined in the utilities comments is not a framework for a sustainable and successful CES program because, among other factors, it fails to include a utility-backed PPA component.

REI is of the position that the Clean Energy Standard can be appropriately and successfully integrated with the existing and future net metering landscape and with other REV initiatives, and support the inclusion of distributed renewable energy in Tier 1 as proposed in the White Paper. While most commenters did not address distributed resources, certain commenters, such as NYPA and the Clean Energy Organizations Collaborative, also supported the inclusion of customer-sited resources into the CES as it will allow for more flexible options for compliance, as well as support the development of distributed energy resources (DER) generally. NYPA argues the CES standards should support the broadest range of renewable energy resources. REI agrees. NYPA goes on to argue that customer-sited resources should generate RECs and there should be no limit on facility size, system capacity and configurations in the CES8. REI supports NYPA's position in favor of allowing all customer-sited renewable resources in the CES and we agree that their inclusion will encourage further development of distributed energy resources.

REI states that the filing of Avangrid utilities and Central Hudson (the "Companies") noted the potential to "double count" for renewable attributes. REI noted this potential in our Initial Comments as well, but expressed that it is a problem that can be avoided. However, REI differs with the filing of Con Edison and National Grid, though, in the belief that the utilization of net metering implies that the renewable energy credits belong to the utility rather than the customer-owner. As noted in our Initial Comments, and supported by the Solar Parties Initial Comments, the RECs should be owned by the project owner until they are expressly purchased by another party (either for CES compliance or another purpose.

REI states that several commenters supported the unlimited inclusion of Canadian hydropower in the CES. REI's position is that a successful and sustainable CES program for New York, that maximizes the benefits to New Yorkers and enjoys continuing public support, will put reasonable limitations on inclusion of Canadian hydropower in the 50% mandate. This would not at all limit imports of Canadian hydropower in response to wholesale market signals, but would not "count" certain larger hydropower projects towards the CES obligation, recognizing that these limitations need to balance the imperative to achieve the 50% goal with other concerns (potential non-climate related environmental impacts, the desirability of ratepayer support for assets owned by a Canadian government entity, the desire to keep energy dollars in-state and foster New York jobs). Therefore, REI proposes that the reasonable restrictions limit hydropower inclusion in Tier 1 to projects that are (1) built after 2015, (2) do not utilize new impoundments, and (3) are less than 30 MW as that is the limit in the current (expired) RPS Main Tier.

REI strenuously disagrees with NYPA's position that new and existing hydropower resources should be eligible for Tier 1 of the RPS and object as a matter of principle to any new hydro impoundments receiving any eligibility in the CES due to their significant and detrimental impacts on the environment. REI objects to the inclusion of existing hydro resources being eligible for Tier 1, as they will cannibalize the market for the development of new renewable energy resources. Their inclusion is counter to the policy goals of getting new investment in new renewable energy infrastructure in *New* York.

REI states that, in their Initial Comments, Hydro-Quebec, Transmission Developers and Poseidon Transmission have advocated for out of state resources to be deemed eligible for inclusion in the CES. While they support the inclusion of imports, they do so with the conditions articulated above. Further, as proposed in the White Paper, all clean energy purchased in compliance with the CES must be deliverable to the customers paying for it.

REI states that all costs required to make clean energy purchased in compliance with the CES deliverable must be accounted for in the evaluation and selection of proposals. If the CES selection process fails to account for the full cost of generation and transmission – including any costs recovered through CARIS or another tariff based mechanism – then it could result in projects that are less cost-effective than others that include the full cost of being deliverable.

REI strongly believe that the core of the CES program needs to be an enforceable obligation for electric distribution

utilities to purchase renewable energy using long-term power purchase agreements in the context of annual obligations laid out from 2017 to 2030.

REI states that the analysis provided by NYSERDA and Staff in this proceeding -- in the LSR Options Paper, the CES White Paper, and the CES Cost Study --- all point to utility-backed PPAs as the procurement model that properly balances risks between ratepayers, developers, distribution utilities, and load-serving entities, and does so at lowest costs. As shown in these analyses, utility-backed PPAs offer the most chance for success in attracting investment and construction in New York, and can advance renewable energy goals at least cost and risk to New York ratepayers. The CES Cost Study also recognizes that PPAs lower overall costs. The utility-backed PPAs would be competitively procured, with independent power producers offering competitive, least-cost bids. The bids could be evaluated and selected using the "implied REC" approach. This approach – competitively selected PPAs using an implied REC selection tool – complements New York's competitive restructured electricity system and maintains the benefits of the NYISO markets.

Retail Energy Supply Association (RESA)

Initial

RESA states that CES will impose a new series of costs and requirements on ESCOs that were first created recently and were unforeseen when ESCOs first entered into various supply arrangements and their fixed price contracts with customers. RESA believes that the Commission should consider allowing the new ESCO CES standards to be implemented on a forward basis (3 years in advance) to allow retail prices to account for the new costs. The CES should exempt existing contracts from the CES requirements so the new rules do not impact existing contracts. Also, ESCOs will need an adequate grace period to procure the necessary renewable attributes under the CES.

RESA recommends that the compliance date be moved to October 1 each year to address the substantive timing concern. RESA is concerned about ESCOs entering the market to acquire the requisite supply they will be competing with many non-competitive entities including the utilities. RESA believes that this market structure can engender a lack of balance, placing ESCOs at a distinct competitive disadvantage, and that the Commission should take active measures to assure that this does not occur.

RESA states that utilities may currently receive "credit" for renewables that are developed by the utilities using NYSERDA funds or through REV demonstration projects. They argue that if any such renewable projects are ultimately funded using ratepayer dollars, then all LSEs should receive a proportional credit for the renewable attributes generated by these projects, because the ESCO's customers are paying their share of these costs.

RESA recommends that the Commission should allow for greater flexibility with respect to eligible RECs, and that the Commission should allow for RECs be retired in adjacent ISOs (PJM and New England) for voluntary retail green power products in NY without a requirement to deliver to the NYISO. This would provide LSEs with a wider array of green products based in areas adjacent to the NYISO.

Reply

RESA believes that the CES process should accommodate the changes adopted in the recent reset order because it would also involve important elements of the CES, the Environmental Disclosure Label Program, and NYGATS particularly with regard to compliant renewable energy products. Further, RESA is concerned how an ESCO would achieve compliance with the Reset Order will be impacted by the CES. RESA states that ESCOs may have entered into fixed price contracts with customers which also bind the ESCO for a fixed term and these types of arrangements should receive grandfather status.

RESA believes that the Commission should allow the new ESCO CES standards to be implemented on a forward basis (3 years in advance) to allow retail prices to account for the new costs and the ESCOs will need an adequate grace period to procure the necessary renewable attributes under the CES. RESA supports renewable generation located in control areas adjacent to the NYISO control areas be eligible so long as the generation is accompanied with documentation of a contract path between the generator and the purchaser that, among other things, includes provision of transmission or transmission rights for delivering the generation via the NYISO and can supply a New York consumption point. RESA states that RECs should be retired in adjacent ISOs (PJM and New England) for voluntary retail green power products in NY without a requirement to deliver the power to NYISO.

Rockland County Legislature Alden H. Wolfe, Chairman

Initial

Rockland County Legislature support conservation and smart metering to reduce the overall energy usage in the State. They

believe that the CES should also apply to all regulated utilities and power authorities throughout New York State, because their participation and cooperation is imperative to the success of the CES.

To help reach the CES goals by 2030, the Legislature believes that the State will need to implement a mechanism of checks and balances and incentives to assure that utility companies are making sufficient renewable energy available to consumers.

The Legislature states that nuclear power is neither clean nor it is renewable energy. Rockland County Legislature believes that Indian Point power plant, as well as other nuclear power plants in New York State, must not be factored into the CES initiative. Chairman of the Rockland County Legislature writes that the Indian Point facility has raised countless safety concerns over the years and should ultimately be shut down. Also, he states that the CES will be a win-win for New York State with the use of wind, solar, geothermal and hydroelectric generation, because it will help reduce pollution, forestall climate change, and lead to economic development within New York State.

Town of Scriba, Oswego, New York: Submitted By: Kenneth E. Burdick, Supervisor

Initial

The Town of Scriba officials support the CES, in particular, the inclusion of nuclear generation in the CES. They state that as the host community for three of the State's four upstate New York nuclear power plants, the Town of Scriba is keenly aware of its role in reducing carbon emissions, as well as preserving the economic benefits nuclear generator provide to the region. One way, to address climate change is to ensure that upstate nuclear energy plants, like Ginna, FitzPatrick and Nine Mile Point continue to operate.

The Town of Scriba officials believe that nuclear energy must be part of the mix, nuclear energy is carbon free and is New York's largest source of zero emission electricity. Upstate nuclear energy plants avoid 16 million tons of carbon emissions annually, which are estimated to be worth about $700 million in annual impact on our communities, which reflects the money saved in environmental and human heath damages. Moreover, upstate New York's four nuclear energy plants support 25,000 jobs, both directly and indirectly through the energy supply chain, including the residents of Scriba.

The Town of Scriba officials states that the CES should recognize the value of nuclear power plants that have proven to operate safely, effective, and reliably. The Town of Scriba writes, "the question isn't *can we* afford to preserve New York's upstate nuclear facilities, it's can we afford *not to.*

Senator Joseph E. Robach, (56th District)

Initial

Senator Robach supports the CES, in particular, the inclusion of nuclear generation in the CES.

Senator Robach states that climate change is an important issue for New Yorkers, and it is a major component of the State Energy Plan. One way to address climate change, is to ensure the continued operation of the upstate nuclear energy plants, Ginna, FitzPatrick and Nine Mile Point. Senator Robach states that nuclear energy is carbon free and is New York's largest source of zero emission electricity. Upstate nuclear facilities generally operate at 90 percent plus capacity factors year in and year out. They are a workhorse for our state's energy supply.

Senator Robach applauds Governor Cuomo for his support of clean energy and nuclear's role in providing clean energy. In addition to the carbon-cutting, upstate New York's three nuclear energy plants support 25,000 jobs, both directly and indirectly through the energy supply chain. This includes many of the constituents residing in Senator Robach's 56th district and these jobs pay well and have good benefits and opportunities for growth in the communities where the plants reside. Senator Robach writes, "the question isn't *can we* afford to preserve New York's upstate nuclear facilities, it's can we afford *not to.*

Senator Liz Kreuger (also signed by the following Senators): Senators Brad Hoylman (27th); Todd Kaminsky (9th); Ruth Hassell-Thomspon (36th); Martin Malave Dilan (18th); Jose Peralta (13th); Joseph Addabbo, Jr (15th); Jose Serrano (29th); Bill Perkins (30th); Velmanette Montgomery (25th); Gustavo Rivera (33th); Jesse Hamilton (20th); Toby Ann Stavisky (16th); Daniel Squandron (26th); Kevin Parker (21st); George Latimer (37th); Timothy M. Kennedy (63rd); Roxanne J. Persaud (19th); James Sanders, Jr. (10th) and Adriano Espaillat (31st)

Initial

Senator Liz Kreuger, along with the other Senators request the inclusion of a separate offshore wind tier in the CES. They believe that developing a long-term, large-scale, megawatt-certain offshore wind program is essential to meeting New York's

targets of cutting carbon 40% by 2030, and sourcing half of the state's electric energy from renewables by the same year. The Senators support a long-term, large-scale program with specific targets that would provide certainty and longevity necessary to get offshore wind to scale. They state that for the sake of our climate, our economy, and New York's working families, it's time to move forward with a comprehensive offshore wind program.

Senator Patty Ritchie (48th District)

Initial

Senator Ritchie states that we must prevent the premature closure of upstate nuclear facilities to achieve the 50 percent renewable standard by 2030, and avoid backtracking on the important emission reductions we have already achieved. Senator Ritchie states that we must preserve New York's nuclear facilities, which produce up to 30 percent of the energy consumed in New York State and provide the important 24/7 capacity and system reliability critical to the statewide energy system.

Senator Ritchie states that it is important that our long term energy plan promotes fuel diversity, system reliability, promotes upstate economic development and protects energy consumers from price volatility.

Senator Ritchie sites the Brattle Group Report, in which it states about the economic benefits to region and New York state, including job and tax revenues and lower energy costs.

Assemblyman Barclay and Senator Ritchie have collected more than 4,000 individual signatures, on a petition to protect Fitzpatrick and upstate nuclear energy jobs.

Senator Richie believes it is important to address necessary upgrades to the State's transmission system, which will allow upstate energy to flow power to starved communities, especially downstate.

Senator, Phil Boyle, (4th District)

Initial

Senator Boyle supports the Clean Energy Standard Staff White Paper and believes that we should drive development of renewable resources, and create a more diversified and resilient electric system. Senator Boyle states that the Clean Energy Standard should promote community and local ownership of renewable energy, to ensure high economic benefits to New Yorkers.

Senator Boyle supports offshore wind and argues that offshore wind will be necessary for the State to meet the 50 percent renewable energy target. Also, offshore wind will reduce the need to build new climate disrupting fossil fuel plants, and it will significantly improve the health of New Yorkers. The Senator advocates for an offshore wind tier that would require electricity suppliers to purchase a guaranteed amount of offshore wind each year and provide the long-term market certainty needed to bring offshore wind to scale in New York.

Senator Boyle recommends a mandate for yearly energy efficiency targets for utilities of at least 2 percent annual energy savings.

Senator Boyle states that the Clean Energy Standard should apply to all utilities and power authorities statewide, including LIPA/PSEG LI and the New York Power Authority (NYPA) as well as, other electricity suppliers. The Senator urges the Commission to facilitate a parallel LIPA and NYPA implementation plan, and adopt compliance mechanism that meet or exceed the Clean Energy Standard.

Senator Rich Funke, (55th District)

Initial

Senator Funke supports the CES and the inclusion of nuclear generation in the CES. The Senator states that nuclear energy is carbon free and is New York's largest source of zero-emission electricity. Upstate nuclear energy plants avoid 16 million tons of carbon emissions annually, which are estimated to be worth about $700 million in annual impact on the communities—which reflects the money saved in environmental and human health damages.

Senator Funke reiterates that upstate New York's three nuclear energy plants (Ginna, FitzPatrick and Nine Mile Point) support 25,000 jobs, both directly and indirectly through the energy supply chain, including many constituents residing in Senator Funke's 55th District. These jobs pay well and have good benefits and opportunities for growth in the communities where the plants reside.

Senator Funke believes that the upstate nuclear energy plants should be included in the CES, so that these plants remain open and continue to provide clean energy and fuel the upstate economy.

Sierra Club Lower Hudson Group (Sierra Club)

Initial

Sierra Club urgently ask that the Public Service Commission hold a timely and comprehensive open hearing regarding the recent proposal to grant vast public subsidies to nuclear energy companies in the public's name. The Group states that the owners of the upstate New York plants are established multi-billion dollar corporations that are already heavily subsidized, through grants of PILOTs (Payments In Lieu of Taxes) and laws such as Price-Anderson that indemnifies the industry for loss when the unexpected happens and places the financial onus on the taxpayers. Furthermore, decommissioning funds and funding for radioactive waste storage are far short of what is necessary, leaving an increasing burden on the taxpayer to foot the bill for planetary desecration.

Sierra Club writes that for the Public Service Commission to refer to nuclear energy as “emissions free” ignores that nuclear plants emit radioactive fluids and gases as a normal and necessary part of their functioning, and to designate nuclear energy as a carbon-free process turns a blind eye to the totality of the fuel cycle that includes mining, milling, enrichment, transportation and extensive construction. Also, there is no end to that fuel cycle because some byproducts will remain mutagenic for millennia.

Sierra Club demands an extension of the period for public comments and open public hearings on energy subsidies to nuclear energy companies, and states that there should be no preferential treatment to nuclear interests and their affiliates in determining the future energy policy.

Reply

Sierra Club is a signatory to the reply comments filed by the Clean Energy Organizations Collaborative (CEOC), and offers the following supplemental reply comments.

Sierra Club believes that the Commission should not expand eligibility to large-scale hydropower.

Sierra Club states that several commenters supported the inclusion of Canadian hydropower in the CES. Granting the expansion in the CES which would include all low carbon hydro facilities (including storage resources) would severely inhibit the growth of emerging renewable technologies and denying the vital localized benefits which flow from those projects.

Sierra Club urges the Commission to maintain the existing eligibility criteria for hydropower, limited to a 2015 vintage

date, no new impoundments and a 30 MW limit for low impact run-of-river plants.

Sierra Club believes that the Commission should not expand the RPS eligibility criteria under the CES or establish a separate tier to include new and existing large-scale hydropower projects. Reliance on large-scale hydropower and expansion of the current eligibility requirements violates the initial objectives of New York's RPS and the Sierra Club fears the reliance on large-scale hydropower will stifle CES investments in emerging renewable energy technologies. Sierra Club writes, large-scale hydropower is an already robust and thriving technology and there is no reasonable justification for the CES to subsidize already-developed technologies that have existed for decades without reliance on RPS incentives.

Sierra Club recommends that there are more cost-effective and beneficial alternatives to achieving the 50% by 2030 target, such as investing in cost-effective energy efficiency and establishing a separate tier for offshore wind (OSW). Creating a separate OSW Tier would rapidly increase OSW development while reducing projects costs, allowing OSW to become competitive and more mature technologies. Also, it would create thousands of jobs, millions of dollars in economic investment, and it would improve the health of all New Yorkers, and foster locational diversity for CES renewable development.

Solar Energy Industries Association (SEIA) and Vote Solar: (The Solar Parties)

Initial

The Solar Parties agree with Staff that load serving entities (LSEs) should be the obligated entities under the CES, and long-term bundled power purchase agreements (PPAs) with the utilities or other credit-worthy counterparties will be necessary to meet the 50% by 2030 target.

The Solar Parties recommend that the Commission adopt an incremental renewables tier (Tier 1) that drives the deployment of large scale and distributed solar towards the 50% mandate by providing long term certainty and requiring full valuation of solar resources.

The Solar Parties recommend that all renewable resources eligible for Tier 1, including distributed solar, should receive RECs for their renewable energy generation. Also, recommend that the Commission monitor market segments within Tier 1, and apply policy support as needed. The Solar Parties support the use of RECs for compliance. State that the White Paper is unclear about whether all Tier 1 eligible resources will get credit for RECs

under the CES. The Solar Parties believe that all Tier 1 eligible resources should generate Tier 1 RECs.

The Solar Parties recommend that the Commission establish an alternative compliance payment (ACP) that prioritizes incremental renewable energy deployment and be based on best practices from other successful state RPS programs. Also, they recommend that the Commission look to states where ACPs have successfully driven new renewables and contained costs as a guide. SEIA recommends that ACP revenues be used to find activities and programs that facilitate renewable energy development in New York or otherwise benefit ratepayers.

The Solar Parties urge the Commission to ensure that NY-Sun is implemented throughout the CES compliance period. The Commission should clearly state the NY-Sun incentives and REC values are not linked, and allow solar generators to sell RECs to LSEs to help meet their compliance targets. LMP+D and Track 2 require careful consideration in the context of the CES proposal.

The Solar Parties believe that all renewable energy generated in the State for application to State’s CES should be tracked through the NYGATS and the associated RECs may be monetized by the generator or its agent. Also, they urge the Commission to adopt Staff’s recommendation to maintain retail net metering for mass market customers in Track 2 proposal.

The Solar Parties state that as the Commission moves forward with the CES rulemaking and related regulatory reforms, including LMP+D and Track 2, the Commission should clearly state that existing projects will be grandfathered for their useful life.

The Solar Parties recommend that the Commission require the use of bundled PPAs as the primary procurement mechanism for Tier 1 renewable resources with a 20-year term and credit worthy counterparty. Also, they believe that the Commission should require utilities to purchase RECs and sell them at cost to other LSEs, and that utility owned generation (UOG) should only be authorized after the DPS has determined that the design of the market or procurement is not a barrier to competitive response.

The Solar Parties recommend that the Commission phase in complementary policies necessary to support a self-initiated PPA market over time, monitor market development, and adjust policies as needed. Also, they believe in encouraging self-initiated PPAs with LSEs and with large customers.

The Solar Parties recommend that the Commission launch a separate stakeholder process outside of the CES process between third party off takers, regulators, utilities, and renewable energy developers to create a framework to support the self-initiated market.

The Solar Parties strongly recommend that the Commission front-load procurement in the years 2016-2019 to coincide with federal tax policy. Also, they recommend that Staff designate NYSERDA as the administrator of central procurement on behalf of utilities, who will act as counterparties and NYSERDA should develop standardized solicitation practices. The Solar Parties urge the Commission not to over rely on third party off takers, especially in the early years.

The Solar Parties urge the Commission to limit banking and borrowing, as it may impair market transparency around supply and demand in the market; and recommend that the Commission set compliance target out to 2030 with the option to review targets as needed, rather than setting the goals every three years. The Solar Parties would like for the Commission to clarify that the final 2030 target would continue beyond 2030 until further amended.

Solar Policy Forum

Initial

The Solar Policy Forum believes that New York should consider the features of the very successful solar program currently operating in Massachusetts. There is ample precedent for a carve-out for solar electric power.

The Solar Policy Forum states that the staff white paper assumes that energy efficiency will be responsible for substantial progress towards the 50 by 30 goal. However, the Energy Efficiency Portfolio Standard (EEPS) struggled to meet its own goals and electricity consumption has actually grown in recent years in New York. Similarly, the staff white paper places considerable reliance on the NY-SUN program for boosting solar. Although solar deployment in NYS has increased, it still lags behind neighboring Massachusetts, suggesting that the NY-SUN may not be the most effective way to reach solar targets.

The Solar Policy Form believes that the Commission shouldn’t risk placing too much reliance on existing programs that were not designed to reach the 50 x 30 goal. Rather, should incorporate the proven models of other states to rapidly build out the renewable capacity.

State University of New York, College of Environmental Science and Forestry, Department of Environmental Resources Engineering: (SUNY)

Initial

SUNY states that nuclear energy provides substantial clean energy benefits to the state of New York and is the largest source of zero emission electricity in the state. SUNY recognizes that the CES is an exciting initiative from Governor Cuomo, but the existing industries in the state must be protected before this promising environmental agenda can fully be implemented. Nuclear energy, and its low carbon foot print, is extremely important to the state and our future generations. SUNY argues the three upstate nuclear power plants produce enough carbon-fee electricity to power more than 800,000 homes; and the key aspect here is that it is "carbon- free" relative to its emissions.

Suffolk County Legislator, Sarah S. Anker, 6th District, Mt. Sinai, NY

Initial

Suffolk County Legislator, Sarah Anker, opposes increase use of nuclear energy from aging nuclear plants. Legislator Anker supports clean and sustainable energy, and believes that all stakeholders, most importantly the residents must be part of the decision making process. Legislator Anker states that mass production of large industrial solar farms in small communities has a devastating effect, not only because it limits the ability of surrounding residents to put solar on their homes due to the filled capacity of the substations, but also it changes the character of the community. Ms. Anker believes that, to bring in big ideas that will dramatically change communities without community input or knowledge is unfair to the residents.

Legislator Anker asks that the DPS include a Senior Advocate on the Public Service Commission and/or as an advisor for the Department of Public Service. Legislator Anker's district includes a large senior population, and for that reason, Legislator Anker asks that DPS create a senior all-electric rate for those who have a disproportionately high electric bill. Lastly, Legislator Anker supports net metering, stating that it is a very important program that should be continued, to encourage residents to put solar on their homes.

Suffolk County Legislature

Initial

Suffolk County Legislature supports the State's efforts to achieve 50% of our electricity from renewable generation sources by the year 2030. Also, the Legislators support deployment of Distributed Energy Resources (DER) as one means to achieve that goal, focusing on, supporting a greater penetration of diverse renewable energy technologies within the Reforming the Energy Vision (REV) initiative and the Clean Energy Standard (CES).

Suffolk County Legislature believes certain policy guidelines should be considered to best ensure both the near-term goals and long-term benefits of the REV and CES initiatives regarding proposed large scale solar photovoltaic arrays in our region. Also, they believe that maximum benefit would be afforded to the electric grid and local environment if those solar arrays were deployed as carports located near concentrated electric loads (i.e. shopping malls, industrial parks, office and municipal buildings, and schools). Further, they state that solar carports shade the ground and would help to reduce the amount of heat energy emitted into the environment by large paved areas and reducing local air temperatures would help to reduce peak summer demand for electricity driven by air conditioning. Targeting parking lots before vegetated/wooded parcels would preserve existing canopy, which supports absorption of carbon dioxide and contributes to regional cooling.

Suffolk County Legislature write that the County has implemented an aggressive self-directed energy efficiency program that has resulted in annual reductions in energy consumption by greater than 30% in targeted facilities. The Legislators urge the state to deliberately link the focus on renewable energy generation with aggressive statewide energy efficiency programs, coupled with effective measurement and verification protocols, to achieve the proposed CES goals.

Suffolk County Legislature support the development of distributed energy resource, particularly renewable platforms. They believe that in addition to diversifying the pool of energy supplied to the region, they offer long-term promise of stable pricing not subject to fossil fuel commodity price volatility.

Taylor Biomass Energy LLC (Taylor)

Initial

Taylor believes that the State must build upon what is working well from the Renewable Portfolio Standard Case 03-E-0188. On the other side of the coin, Taylor recommends the State

amend and improve parts of the foundation which do not support the new competitive clean energy markets in which the State wants to lead. Taylor finds most of the requirements in the Biomass Power Guide, as they relate to the eligibility and qualification of adulterated biomass, to be reasonable and to lead to a clean and competitive energy product.

Taylor recommends the Commission eliminate the comparative emission testing from the Biomass Power Guide to move forward with a competitive energy standard. Further, they state that the Commission should replace the current emission testing with an existing DEC standard for a landfill gas generator.

Taylor believes that regulated utility ownership of renewable projects should be allowed under the CES and be capped at a certain percentage of the franchise area's obligation to generate RECs. Taylor suggests the targets specified are ambitious targets, and as demonstrated by NYSERDA performance in RPS centralized procurement, accomplishing similar goals is very difficult.

Transmission Developers, Inc. (TDI)

Initial

TDI states that the CES should explicitly acknowledge that Large-Scale hydropower (L-S Hydro) must be eligible for inclusion in the CES structure. Also, TDI notes that neither the Commission's January 21, 2016 Order nor the White Paper expressly precludes L-S Hydro from qualifying and, at several points, both documents state and strongly imply that the universe of sources qualifying for the CES must be more inclusive than the one set out in the existing Renewable Portfolio Standard. Furthermore, TDI writes that DPS Staff and the PSC Chair seemed to confirm that L-S Hydro would be eligible during a February 26, 2016 CES workshop in New York City.

TDI believes that attaining the CES goals will be challenging without L-S Hydro. TDI believes the projections for growth in the solar sector and on shore wind may be challenging. If the offshore wind industry does not experience an unprecedented ramp-up in New York, an additional 4,275 GWh/yr of renewable generation will need to be secured from other sources.

TDI writes, it is likely that the Southern New England states will be procuring significant amounts of renewable energy under long-term contracts starting as early as 2020 in order to meet long term greenhouse gas reduction goals. The vast majority of the energy will likely be imported from other states.

TDI believes that the CES must address the cost and the environmental and technical issues associated with reliably interconnecting thousands of MWs of dispersed, intermittent resources. TDI believes that allowing L-S Hydro to qualify for the CES will make the 2030 goals more achievable and preserve grid and market functionality.

Ulster County Legislature

Initial

The Ulster County Legislature strongly supports Tier 1 and Tier 2 of the NY State Public Service Commission's proposed Clean Energy Standard to ensure the purchase of new and existing renewable energy resources, and they strongly oppose the inclusion of subsidies for aging and unsafe nuclear reactors as proposed in Tier 3. The Ulster County Legislators state that the PSC must not waste ratepayer subsidies on nuclear power. The PSC's rationale for including the Tier 3 nuclear subsidies in the Clean Energy Standard is the unsupported assumption that New York cannot meet its 2030 greenhouse gas reduction goals if the financially-unsustainable upstate nuclear plants are allowed to close.

The Ulster County Legislators believe that it is wrong to make our hard working ratepayers bail out nuclear reactors and allow this misguided corporate welfare. They write that nuclear energy is not clean or carbon-free.

The Ulster County Legislators support Tier 1 and Tier 2 Renewable Energy Credits (RECs), and they strongly oppose Tier 3 subsidies—the Zero Emission Credits (ZECs) for nuclear power.

Upstate Energy Jobs

Initial

Upstate Energy Jobs believes that a 50% renewable standard by 2030 is an admirable goal but must be coupled with the proposed nuclear bridge. Upstate Energy Jobs states that New York State must be realistic that this aggressive goal could take multiple decades to complete based on past history, and believes that the reliance on a nuclear bridge is not only good policy but a critical component for meeting the CES's objectives.

Upstate Energy Jobs states that New York's nuclear facilities produce up to 30% of energy consumed in New York State and the loss of any existing unit would substantially impact climate progress to date and make the many of the State's initiatives virtually impossible to reach. Further they state that, upstate New York's three nuclear energy power plants (and

four reactors total) contribute approximately $3.16 billion to the State's gross domestic product (GDP), account for nearly 25,000 full-time jobs (direct and indirect), and provide other significant economic, environmental and societal benefits.

Upstate Energy Jobs believes that the loss of Fitzpatrick or Ginna will result in a failure to meet the State's energy goals. The timing of the adoption of a CES, inclusive of the nuclear tier, is absolutely critical to preserving any chance the State of New York has in reaching its goals, and avoiding a devastating, negative economic impact for a region that can ill-afford a period of improsperity.

Vanguard Renewables

Reply

Vanguard Renewables, speaking on behalf of anaerobic digestion, requests that each distinguished type of biogas and biomass be treated separately due to the unique differences between an agricultural anaerobic digestion system and biomass combustion.

Vanguard Renewables disagrees with NYDEC that not all biomass/biogas platforms are created equal and it is our opinion that the context of this letter by DEC was biomass combustion, not biogas from manure-based AD systems. Vanguard requests that biogas generators be stratified by the categories as laid out in Appendix C when contemplating new policy.

Vanguard Renewables states that it is important to acknowledge that NYDEC funded a study in 2015 by the American Chemical Society which concluded that an on-farm anaerobic codigestion system resulted in a 71% reduction in greenhouse gas as compared to conventional treatment of manure and food waste.

Vanguard Renewables would like clarification as to the Department of Environmental Conservation's comments, as broad statements that were made do not appropriately represent the overwhelming positives for GHG emissions from farm based anaerobic digesters rather than paint the renewable energy sector by a single inaccurate set of statements about bioenergy as only one technology.

Clean Energy Standard
Cost Study Comments

Alliance for Green Economy and Nuclear Information and Resource Service (AGREE)

AGREE believes that the cost study does not meet a reasonable standard of transparency and detail, thereby depriving the public, parties, and the Commission of the information needed to analyze the costs and benefits of the nuclear tier.

AGREE states that the cost estimates provided are inconsistent without other available information on nuclear operation costs and trends, and appear to substantially underestimate costs. AGREE believes that Staff has provided no information on the methodology used to arrive at the cost estimates. AGREE states that this is a violation of rights to due process and equal protection under the law. AGREE requests that the Commission order Staff to supplement the Cost Study with a detailed presentation of its Tier 3 analysis as presented in the Ginna and Nine Mile Point proceedings.

AGREE states that the cost study dramatically underestimates the likely costs of the nuclear tier. AGREE notes that Staff has not proposed any alternatives to the purchases of ZECs for achieving the state's policy objectives, should reactors close or program costs greatly exceed projected levels. Nuclear industry has pledged to reduce costs by 30% by 2018, this claim should be met with skepticism based on historical record, cost dynamics of nuclear reactors, and inconsistencies in the industry produced data.

According to the recent NEI report, AGREE perceives the industry's strategy for achieving the 30% reduction goal would appear to be far more of an exercise in creative accounting and public relations than actual cost reductions, utilizing methodological adjustments to create the impression of financial viability.

AGREE believes that the cost study overestimates the carbon-displacement benefits of preserving the upstate NY nuclear fleet. It does not take into account the life-cycle GHG emissions associated with nuclear power and assumes that not even one MW of nuclear generation could be replaced by renewable energy or energy efficiency in the coming years.

AGREE further states that the cost study fails to consider other social costs of nuclear energy, which are externalized in

the form of public subsidies, health impacts, water usage, environmental damage and risk. When these externalized costs, many of which are unique to nuclear power, are taken into account, the costs of the nuclear tier far outweigh the benefits, even using conservative numbers.

AGREE states the following costs should be considered: environmental and health impacts of uranium mining and milling on workers and local communities; routine and accidental radioactive releases during power production; economic, health and environmental costs of high level nuclear waste; potential for catastrophic accident (property loss, health effects and environmental harm); and additional water use.

According to AGREE the Cost Study inexplicably considers no scenario in which wholesale electricity rates remain relatively flat, despite the Commission's various policies and NYISO's market responses that would suppress prices. As a result, the Cost Study sets consumers up for unexpected above market rates for the nuclear tier that are not accounted for in the Cost Study.

AGREE believes that the Cost study incorporates, without critique, a biased pro-nuclear study that dramatically exaggerates the impact that New York's nuclear fleet has on the economy. No attempt was made to survey studies put forth by independent researchers or nuclear watchdogs or to provide a DPS analysis of the merits of the study. According to AGREE, nearly all the economic benefits identified stem from the claim that Upstate nuclear plants suppress wholesale market prices for $10/MWh, but provides no methodology or rationale to substantiate that claim.

American Biogas Council (ABC)

ABC states that biogas systems are commercial and operational in New York and have a 70-90% capacity factor, and biogas systems have a higher GHG reduction compared to other renewables because these systems keep organic material from generating GHGs.

ABC disagrees with the Cost Study that biogas systems have higher costs and only a few are commercially operational.

ABC argues that not all renewable energy technologies are created equal when it comes to the actual energy produced (kWh) compared to their rated capacity (kW). ABC states that typically, capacity factors for solar photovoltaic (PV) and wind are ~3x-5x LESS than for biogas systems (18-25%). Biogas system

capacity factors are usually about 90% but can range from 75-95%.

To the point made in the Study that biogas systems were not included due to capital cost, ABC believes this point to be without merit and that biogas systems should be included.

In New York, ABC sees the potential for more than 300 new projects to be developed based on the estimated amount of available organic material.

American Council for an Energy-Efficient Economy (ACEEE)

According to ACEEE, the Cost Study reinforces the role of energy efficiency and the more energy efficiency, the lower the total energy use and the lower the cost of the CES.

ACEEE agrees with the Staff that energy efficiency can have a substantial impact on the achievability and affordability of the CES. ACEEE suggests energy efficiency savings should be assigned to specific entities, such as LSE's or distribution utilities, through a new CES tier.

ACEEE recommends that energy savings targets for energy efficiency and renewable energy should be separate, through the ETIP process. Energy efficiency and renewable energy are somewhat different and combining them into a single structure creates complexity and opportunities for gaming that can be avoided with separate standards. ACEEE notes that Hawaii, Nevada and North Carolina all had combined energy efficiency and renewable energy standards and Hawaii and Nevada have since separated them to improve operations and goal achievement with suggestions to do the same in North Carolina.

ACEEE notes that the Staff White Paper states that the Clean Energy Advisory Committee (CEAC) need to provide the next steps for energy efficiency to the Commission by December 2016. ACEEE is concerned about this, and would like the energy efficiency discussions accelerated, so that decisions can be made for energy efficiency savings for 2017, and not be delayed until 2018.

American Petroleum Institute (API)

API expresses concern that the Cost Study assumes energy price would remain constant, and that the price of natural gas would be governed by the trajectory in the Annual Energy Outlook (AEO) 2015. According to API, the estimate of oil and natural gas production by the Energy Information Administration (EIA) over the past several AEOs has been significantly lower than realized annual production. This is a result of the EIA not fully capturing the extent of increasing reserves and the pace

of technological improvements from which to extract those reserves.

API states that the report does not point out which natural gas prices it used from the AEO or if there was any basis adjustment. If the report used the Henry Hub price or the Lower-48 average price from the AEO without a basis adjustment that would be incorrect because New York is next to the Marcellus.

API states that the report does not show its interest rate assumption but argues that the current low interest rate environment would prevail, at least to the mid-2020s. Given the announced direction and actions of the Federal Reserve monetary policy, API argues this assumption is not likely to be reasonable.

API believes that it is unclear from the report which specific Social Cost of Carbon (SCC) numbers from the EPA they used (only a graph is presented), but if it is the number published by the Intergovernmental Working Group, then the benefits for New York are largely overstated because the SCC number is a global number.

API states that the report does not calculate the macroeconomic impact of the CES. The report, however, does cite other studies that have been done on this issue. API believes the appropriate policy question to consider is not one of total jobs created over a time period from a specific renewable technology deployment but rather it should be a comparison of the jobs created by that renewable deployment versus jobs that would be created with an alternative investment of that same capital.

API believes that the methodology used to estimate costs of various renewable technologies should include the cost of other state subsidies. Technologies that might be able to avail themselves of favorable rate structures, such as, net-metered distributed solar PV, were simply assumed not to participate in those programs.

API agrees with the Northeast Energy Efficiency Partnership (NEEP), in pointing out in its comments on the Staff White Paper that the NYISO Gold Book already accounts for planned efficiency increases and that the CES assumptions far exceed them and the staff methodology for assigning pro rata savings figures to LIPA, NYPA and the municipal electric utilities is double the figures reported to EIA by those entities, meaning more than 300 GWh of efficiency might not materialize.

According to API, NY BEST in its comments on the Staff White Paper state that New York will need 2.5 GW of Energy

Storage by 2025 and 3.2 GW by 2030 to accommodate intermittent renewables into the grid without relying on fossil fuels to provide dispatchable power. The cost study does not account for these costs or does not attempt to model on a locational basis where dispatchable resources will need to run as renewables are added. In the alternative, API believes that the cost study should acknowledge the important role that natural gas will play in providing back up to intermittent resources.

Azure Mountain Power Co., Boralex Hydro Operations, Inc., Chasm Falls Hydro, Inc., Eagle Creek Renewable Energy, Gravity Renewables, Kruger Energy Inc./KEI USA Power Management, Inc., Oakvale Hydro, Riverrat Glass & Electric (Submitted By: Azure Mountain Power Co.)

Azure Mountain Power Co. proposes that hydro facilities less than or equal to 30MW of capacity be eligible for the CES program. Also, it proposes that the initial (year 1) standard offer awards be provided at the minimum operating cost deficit for the megawatt hours actually produced.

Azure Mountain Power Co. proposes that awards granted under this program be indexed to the LBMP, to ensure stability for the hydro producers and to assure that electric consumers in the state will not over-pay in the event that the wholesale electricity price goes up. In addition, Azure Mountain Power Co. proposes that the award provided to hydro producers under the CES program be allocated from the RGGI funds to avoid impacting the State budget.

Azure Mountain Power Co. requests that the Commission or the State Legislature intervene to ensure the State created Remote Net Metering program is successful. Also, several small hydro plants have investigated the feasibility for Remote Net Metering, only to discover that the ISO zones and utility territory boundaries were not locally congruent. Azure Mountain Power Co. requests that, in addition to off-takers in the pricing zone, in which the renewable generating facility is located, off-takers in pricing zones adjacent to the one in which the facility is located be allowed for the purpose of Remote Net Metering.

Azure Mountain Power Co. proposes the following revisions for the Tier REC pricing structure proposed in the CES White Paper. Their changes are focused on encouraging capital investment to extend the life of existing hydro plants and ensuring an equitable REC marketplace for small hydro plants.

Azure requests that hydroelectric generation facilities with a capacity of no more than thirty (30) MW that began operation on or after January 1, 2015 and that are run-of-river, including

hydroelectric generation facilities combined with battery storage be eligible for Tier 1. Hydroelectric generation facilities refurbished or repowered on or after January 1, 2015 should also be eligible as Tier 1 if they can demonstrate that they are operating beyond their useful life following capital investment representing at least 80% of the depreciated value of the facility prior to the improvement and they are in compliance with the Federal Energy Regulatory Commission issued current license requirements or are exempt from those requirements. Qualifying investments include prime mover, dams, conduits, fish passage and water conveyance system.

Azure recommends adding the clause: “RECs produced by hydro plants of any size which are eligible to trade in markets outside of the New York State control area.” to Tier A.

Tier 2C should include hydroelectric generation facilities that began operation before January 1, 2015, have a capacity of 5 MW or less, meet current Federal Energy Regulatory Commissions license requirements and are located within the control area of the New York Independent System Operator (NYISO).

Azure Mountain Power Co. believes that New York should implement long-term pricing for the REC commodity for ten years or longer. This will give the hydro community the incentive assurance they need to make long-term investments and be an additional motivator that will encourage NY producers to sell their attributes into NY as opposed to the REC markets where prices are constantly adjusted.

Azure Mountain Power Co. suggests that the REC Market be reviewed annually by the Commission in a process which gathers input from hydro and other renewable producers to ensure that the market is robust and REC prices are sufficient to continue encouraging the addition of renewable resources to New York State.

Azure Mountain Power Co. asks that special consideration be given to small hydro facilities that provide crucial services (frequency regulation, spinning reserves, etc.) in a geographic area that may not be priced into the current system. As most owners of these small hydro facilities do not have the personnel or capabilities to follow NYISO proceedings, Azure asks that the State develop a study on the benefits of small hydro to the grid – that can be used for future discussions with NYISO.

Azure Mountain Power Co. states that the Commission include a provision for securitization of debt for small hydro facilities that produce increases in efficiency or increase total facility output.

Brookfield Renewables (Brookfield)

According to Brookfield the Cost Study should include the social cost of carbon in the cost-benefit analysis for Tier 2B. By leaving it out, the cost of Tier 2B appears to have significant financial cost, as opposed to benefit, to the CES.

Brookfield believes that Tier 2B should be valued and evaluated the same as Tier 2A, as ample revenue opportunities are available outside of New York, and devaluation of Tier 2B resources risks loss of generation.

Brookfield argues the values and approach in the Cost Study lacks a clear and demonstrable basis. They support legacy hydropower resources, which are currently classified as Tier 2B in the Cost Study, can qualify in renewable energy programs in surrounding markets.

According to Brookfield the states should discriminate between “competitive” and “non-competitive” resources, which is a distinction that will not survive over time as competitive opportunities continue to evolve for existing renewable assets.

Brookfield states that the Cost Study does not specify the assumptions used as the basis for the “representative” costs of similar resources in nearby state RPS markets let alone identify the states, programs, or data relied on. The Commenter respectfully requests that the background information used in the evaluation of nearby programs and resources be made public.

According to Brookfield the Cost Study does not list an ACP for Tier 2B. The Commenter suggests the ACP for Tier 2B should be set at the same value for Tier 2A, either by merging the tiers or, in the absence of merger, by applying the same methodology for calculating the ACP for both tiers.

Brookfield believes that the bundled PPA price premium should be evaluated for Tier 2B resources. The Cost Study included an analysis of levelized prices paid under bundled PPAs for Tier 2A generators but should have been performed for Tier 2B generators. Brookfield argues the Cost Study neglects to address reliability–related cost issues. The selection of technologies evaluated is not clear, and as such, the assumptions and the formulae should be made public. Overall, Brookfield suggests the Cost Study lacks sufficient detail to fully evaluate whether the assumptions are even reasonable.

The Business Council of New York State (BCNY)

The Business Council of New York State (BCNY) requests that DPS direct NYSERDA to amend and reissue the current Cost Study

and should have been issued and reviewed prior to deadline of the initial comment period on the CES.

The BCNY states that Cost Study fails to fulfill the requirements of the CES White Paper, while overstating benefits and understating costs.

The BCNY believes that full estimated costs of long term power purchase agreements should be reflected in the Cost Study. Also, the Cost Study should be amended to evaluate the probability of the wholesale energy price base case used in the study, and evaluate a high oil and gas resource scenario.

If there is too much uncertainty to accurately project costs beyond 2023, Business Council questions whether NY should be making binding decisions that commit customers to higher electricity costs beyond 2023.

According to the BCNY, results of the Cost Study are based on uncertain load forecasts should be amended to evaluate the costs of the CES using the NYISO load forecast. Also, the Cost Study appears to omit or underestimate the costs associated with implementing the proposed CES (i.e. build out of state's transmission infrastructure, rise in the state's Installed Reserve Margin.)

City of New York (City)

The City states that a review of the Cost Study reveals that it does not contain most of the data and assumptions by which its conclusions were determined.

The City believes that the Commission should not render any decisions for the period post-2017, until the information is provided and parties are given a reasonable amount of time to review, understand, evaluate, and comment on the details underlying the Cost Study.

The City states that the Cost Study did not examine the relative costs and benefits of energy efficiency and renewable resources, and the Commission should use such information to determine the best mix of the two methods of reducing carbon emissions.

The City believes energy efficiency measures can be targeted to specific populations, such as those with the highest energy burdens and should reduce the need for new transmission or distribution infrastructure, as well as the loading on existing infrastructure.

The City states that insufficient consideration is given to the contribution from Canadian hydropower. The City is concerned

about the limited role of Canadian hydropower in meeting the Clean Energy Standard goals because is substantial disagreement as to whether the assumptions about the penetration of new wind farms and solar arrays are reasonable, achievable, and cost-effective.

The City urges the Commission to not create barriers to the use of hydropower, and ensure that Canadian hydro is not unfairly excluded.

The City believes that societal cost/benefit analysis should be comprehensive, and they should be included in the Cost Study, particularly, NO_x and SO_x damage cost estimates. Examples of other benefits that should be considered include the reduction in emissions of mercury and other heavy metals, as well as the reductions of PM10 and PM2.5.

The City is concerned that the Cost Study provides limited analysis of the costs of the Clean Energy Standard from 2017 to 2019 but is focused on the years 2020 through 2023, which may understate the estimated bill impacts.

The City argues that the bill impacts during the period 2017 through 2030 are likely to greatly exceed the 1% claimed in the Cost Study and the 1% bill impact entirely omits the cost of Tier 3, and should have been included in the analysis.

The City suggests it is likely that there will be additional bill impacts between 2030 and 2050 and such costs are not covered by the Cost Study. It is inappropriate for the Cost Study to exclude consideration of those costs but simultaneously suggest that the bill impacts through 2049 will be less than 1%.

The City states that for the period 2031 to 2050, the Commission should provide the annual contribution to bill impacts from the Clean Energy Standard and make clear that it is not projecting total annual bill impacts for that period post 2030 associated with the Clean Energy Standard. Additionally, the Commission should require that the long-term bill impact analysis be revised in a similar manner. In particular, the health benefits of reducing harmful air emissions should be included, as well as the costs of the NY-Sun program.

The City states that Cost Study does not include any estimate of the costs of new transmission capacity.

The City states that with respect to Tier 2 (including 2A and 2B), some information is provided in the Cost Study regarding the derivation of forecast costs but the discussion of the derivation (*e.g.*, slide 270) reveals that a number of

assumptions were made to calculate the Tier 2A cost, but no details were provided.

The City notes that, when compared to the results of new renewable resources shown on Slide 38, purchasing RECs from the market would be more expensive than obtaining RECs from the construction of new renewable resources. That result does not make sense, but because of the lack of details on the derivation of cost estimates, it is not possible to understand why the former would be more costly than the latter.

According to the City, the Cost Study indicates that the Tier 2B targets are set based on the amount of Large Scale Renewables in 2014 baseline that are not owned by NY State Entities, net of expired RPS Main Tier contracts. (Slide 274). The City has not been able to identify any publicly-available source of this information, and from the explanation, it is not clear how the information was converted into the annual Tier 2B targets.

The City indicates that no actual analysis of operating costs were performed for Tier 2B, and that additional payments may be required, but apparently no attempt was made to determine the potential amount of such payments.

According to the City the reasonableness of the assumptions that revenues will exceed costs also require further scrutiny. The Commission already has experience with this matter, such as the Renewable Portfolio Standard “Maintenance Tier.”

The City is concerned that for Tier 3, an enormous range of cost impacts is provided, but the lack of information on the derivation of this range makes it impossible to understand or evaluate the cost estimate.

According to the City the Commission should require a thorough analysis before deciding on whether to rely on power purchase agreements, and if so, how they should be structured. Specifically, all of the data and assumptions underlying the Cost Study should be made public and subjected to scrutiny. A rigorous analysis is needed to ensure the Commission proceeds in a cost-effective manner.

Clean Energy Organizations Collaborative (CEOC): Acadia Center, Citizens Campaign for the Environment, Environmental Advocates of New York, Natural Resources Defense Council, New York Public Interest Research Group, Pace Energy and Climate Center, and Sierra Club

CEOC states that the Cost Study demonstrates substantial net program benefits over all modeled procurement strategies,

while gross program costs are projected to be well within New York customers' willingness to pay.

According to CEOC, the Cost Study appropriately incorporates a social cost of carbon, thereby better accounting for one of the key benefits renewable energy deployment delivers; one that has often not been taken into account in traditional cost benefit analyses. However, because the Cost Study uses a conservative social cost of carbon, and because it does not account for the social cost of conventional air pollution from fossil fuel generation, or for expected macroeconomic benefits, the *actual* net benefits of the CES are considerably larger than those identified.

CEOC notes that the Cost Study's sensitivity analyses of load growth scenarios highlight the importance of cost-effective investments in energy efficiency, which should be a mandatory target of at least 2% per year, as is achieved in other Northeastern states. A portfolio analysis of energy efficiency and renewable energy would be appropriate to measure the benefits of both resources in combination.

CEOC states that the Cost Study emphasizes the comparative benefit of long-term Power Purchase Agreements over REC-only procurement strategies. CEOC supports a robust long-term PPA requirement that is enforceable independent of the CES REC procurement requirement.

CEOC supports offshore wind as a priority resource for the State to develop through a separate tier. The Cost Study suggests that an offshore wind tier would deliver significant value to the State, through resource portfolio savings and potential transmission cost benefits.

Cornell University, College of Agriculture and Life Sciences (Cornell University)

Cornell University states that the Cost Study compares renewable energy technology cost effectiveness using a cost per unit of generation capacity ($/kW). However, Cornell University argues that the appropriate metric is the cost per unit of greenhouse gas mitigated ($/C02e9) both for the select renewable energy technologies analyzed by the cost study and also for manure-based anaerobic digestion (commonly referred to as ADG). Use of the cost per unit of GHG mitigated metric more completely incorporates the real reasons for supporting renewable energy deployment as the Public Service Commission works to meet the State's goals of greenhouse gas (GHG) reduction.

Cornell University is concerned that manure-based ADG was not included because of higher costs, only) relatively small quantities available and technologies not yet fully commercial.

Cornell University believes that it is important for the Cost Study to recognize that dairy manure based ADG's are renewable energy electricity generators, part of a consistent and needed effort to substantially reduce GHG emissions from an important sector of New York's agricultural and rural based economy.

Cornell University notes that, appropriate metric for assessing the full value of each renewable energy technology is the cost per unit of GHG mitigated and manure-based ADGs are cost comparative with WWTP ADG systems. In addition, manure-based ADGs have a comparatively higher GHG reduction due to the reductions these systems provide above other renewable energy technologies and the technology is commercially available is robust and used by NYS dairy farmers.

Cornell University argues that the capital cost manure-based ADGs are no higher than the cost of WWTP ADGs, and thus on this basis alone, manure-based ADGs should have been included in the Cost Study.

Cornell University notes that capacity factors (CF) for solar photovoltaic (PV) and wind are 3x LESS than for manure-based ADGs. In light of this fact, Cornell argues comparisons between renewable energy technologies should be made using capital cost standardized to energy generation potential (i.e., cost per unit of energy generated ($ per kWh) since this metric is more closely linked to the stated policy objectives.

Cornell University states that relative to the point made in the Cost Study that manure-based ADGs were initially not included due to capital cost, clearly the information provided herein does not support any basis for this decision and further shows that, in fact, manure-based ADGs can be very cost competitive.

Cornell University believes that dairy manure-derived biogas (including biogas jointly derived from co-digestion of organic substrates) produces renewable energy, results in a net reduction in GHG emissions, and supports dairy farming, the main driver of New York State's agricultural sector.

Cornell University notes that, the additional societal benefit of manure-based ADG can be calculated using EPA's Social Cost of Carbon (SCC) of $39 per metric ton of C02eq (2011 value at a 3% discount rate). With more than 500 NYS farms with enough cows to support a manure-based ADG system (at least 350,000 cows according to the USDA NASS statistics in 2012) the GHG reductions are estimated to be 0.4 million metric tons of C02e9 *in addition*

to the reduction in GHG from the renewable energy they produced.

Cornell University emphasizes the reliability that modern manure-based ADGs have a CF exceeding 90% as they are not dependent on the natural photoperiod for solar PV systems or the wind speed for wind systems.

Cornell University believes that manure-based ADGs can be significant and useful in the rural areas at the end of distribution lines. With a price for electricity that reflects the externalities, including the social cost of carbon and other environmental and social benefits, NYS dairy farms with over 200 cows will be motivated to install manure-based anaerobic digester systems. Assuming full deployment of ADG on these farms, Cornell estimates an aggregated renewable energy generation capacity of 46 MW. If co-digestion with organic substrates is employed, energy generation capacity would easily increase several-fold.

Cornell University states that, at this time, there are several commercially available ADG technologies being offered by a range of companies that are actively designing, constructing, and operating successful manure-based ADGs on NYS dairy farms and also in other dairy intensive states. Cornell advises the Commission that only a limited number of NYS farmers have benefited from funds from previous opportunities available from NYSERDA to build and operate manure-based ADGs, but many more NYS farms are candidates for systems.

Council on Intelligent Energy & Conservation Policy and Promoting Health and Sustainable Energy (CIECP and PHASE)

According to CIECP and PHASE nuclear power is highly-polluting, producing radioactive waste, heat and greenhouse gases. Designation of nuclear power as clean or zero carbon is utterly illegitimate as a matter of science.

CIECP and PHASE believes that State assets and clean energy initiatives should be strategically targeted toward helping communities with old power sources transition.

CIECP and PHASE urges the DPS to consider the damage that full nuclear fuel cycle has and will continue to have on indigenous, impoverished and minority communities.

CIECP and PHASE is astonished that the DPS adopted the economic modeling, assumptions, and conclusions of reports prepared by two individuals affiliated with the Brattle Group, initially engaged by Nuclear Matters.

CIECP and PHASE states that there is no longer any defensive argument for continuing to prop up extractive forms of

power. The burden they impose-upon the environment, human health and the climate is increasingly untenable. New York must cease all manner of support for highly polluting forms of power.

Entergy Nuclear Indian Point 2, LLC; Entergy Nuclear Indian Point 3, LLC; Entergy Nuclear FitzPatrick, LLC,; and Entergy Nuclear Operations, Inc. (Entergy Entities)

Entergy Entities supports the CES Cost Study because the CES recognizes reducing greenhouse gas emission 40% by 2030, and incorporating the social value of carbon as a core component of its cost analyses.

Entergy Entities believes that it is fundamentally wrong to characterize CES payments as a subsidy.

Entergy Entities supports technology neutral approach applied to all non-emitting technologies. They believe that DPS Staff's findings in the Cost Study confirm Dr. Susan Tierney's proposal and should be extended to all CES tiers pursuant to a market-based approach because it will ensure the most cost effective competition between technologies.

Entergy Entities believes that CES participation must be open to all non-emitting and low-emitting resources on a non-discriminatory basis, including Indian Point. They argue the facility allows for significant avoided emissions, provides fuel diversity, electric pricing and local and State economic benefits.

Entergy Entities believes that the Public Service Commission should eliminate the Tier 3 eligibility requirements, treat all non-emitting and low-emitting resources on a level playing field and direct DPS staff to augment the Cost Study to include Indian Point specific data.

States that both Entergy Entities and the Independent Power Producers of New York, Inc. (IPPNY) established in their White Paper comments, DPS Staff's "high imports" sensitivity is materially flawed. Entergy Entities believes that the Public Service Commission should either disregard the "high import" sensitivity because it provides incomplete information--insufficient to support a reasonable determination--or require DPS Staff to modify it high imports sensitivity analysis to fully account for the costs of all aspects of the project which must include the costs of the proposed transmission line. Entergy Entities agrees that construction of the new transmission line indisputably is required for the substantial increase in hydroelectric imports considered in this sensitivity to be realized. Entergy Entities believes that unless the full

costs of alternatives are incorporated into the Cost Study, it is not possible to identify the most efficient and cost-effective CES options.

Energy Vision (EV)

EV states that research makes it clear that the exclusion of non-wastewater treatment plant biogas systems in the Cost Study on the basis of "a combination of higher costs, relatively small quantities available over the study period, or technologies not yet fully commercial." is a mistake for a number of reasons.

EV states that biogas systems in the U.S. are commercial and operating systems in New York and have a 70-90% capacity factor that non-wastewater biogas-to-electricity systems show. They are not only cost competitive with wastewater systems, but even with some wind and solar systems.

EV argues biogas systems can achieve inordinately higher lifecycle GHG reductions compared to other renewable energy technologies and displaces fossil-based sources of heat, power and fuel.

EV notes that several stand-alone food waste digester projects are being explored, especially in the New York City region where commercial and residential organic waste diversion laws are coming into effect. One such project is the large food waste digester by American Organic Energy in Yaphank, which was recognized by Governor Cuomo in September of 2015.

Independent Power Producers of New York (IPPNY)

IPPNY believes the Cost Study does not contain sufficient detail about the assumptions Staff used, such as for price forecasts, program costs, and other critical factors, for any stakeholder to validate the Cost Study's methodology or conclusions. The Commission should therefore direct Staff to provide more detail about the issues raised herein to ensure the accuracy of the information on which it bases CES policy decisions.

According to IPPNY, the energy and capacity price forecasts appear inordinately high. The Cost Study does not provide any detail on how it performed the "adjustment" process. IPPNY believes that the Commission should direct Staff to release more detail about the process it used to perform its price "adjustment" and to make explicit any assumptions it made about the monetized cost of carbon.

IPPNY does not agree with the Cost Study that the capacity prices in the New York Control Area (“NYCA”) will spike to be at or near the cost of new entry (“CONE”) by 2017.

IPPNY believes that the forecast does not seem to account adequately for the zero emission credit (“ZEC”) payments to upstate nuclear facilities assumed in the White Paper to meet future and current greenhouse gas (“GHG”) emission, sulfur dioxide (“SO2”), nitrogen oxide (“NOx”), particulate matter (“PM”), and ozone requirements, the effect of which may be to maintain these resources, which provide a significant level of capacity.

IPPNY points out that the NYISO, in its most recent annual load and capacity report, anticipates far less load growth than would justify such a rise.

According to IPPNY, the Cost Study appears to reach its estimate of Net Program Costs by misapplying the value of carbon benefits in two critical ways. IPPNY believes that the Cost Study fails to account for the carbon allowances created by the RGGI and the effect of New York’s actions on that initiative. Also, the Cost Study appears to overestimate the Social Cost of Carbon (“SCC”).

IPPNY notes that the Cost Study appears to misstate the economic impacts of the CES and no specific analysis was conducted for this study. By not conducting its study, IPPNY points out that Staff risks overlooking vital information pertaining to the CES’s overall economic impact.

IPPNY states that the studies provided in the Cost Study neglect that other non-renewable units will likely retire and that those retirements will reduce direct and indirect jobs and tax revenues. Therefore, the Cost Study’s estimate of net job creation and retention seems to presume that all other units in the market will remain in service.

IPPNY believes that the Commission should direct Staff to either provide the details of how the studies it cites account for these impacts, or conduct its own study that accounts for such impacts and adjust its analyses accordingly.

IPPNY notes that the Cost Study includes assumptions that substantially underestimate the costs of the Champlain Hudson Power Express transmission line. IPPNY states that the Cost Study provides no detail about the nature of exactly how the costs of the transmission would be socialized and does not appear to reflect those costs anywhere in its analysis.

IPPNY writes, to the extent that adjustments to the energy price projections are made, those adjustments should be carried over to the analysis of Tier 3 costs associated with ZEC payments to existing upstate nuclear facilities.

IPPNY asserts that the Cost Study uses a number of factors to determine a levelized cost of entry ("LCOE") for various types of renewable resources. However, it does not provide any detail on exactly how Staff used the LCOE to reach the implicit premium payments those resources would receive under the CES.

IPPNY requests more detail is required on the assumed levels of the Alternative Compliance Payment ("ACP"). The assumed ACP of $25.75 for Tier 2A seems low for New York, which is competing with a New England market that has an ACP that is more than $40.00 higher than the assumed level for New York. IPPNY believes the ACP will likely need to be set more in line with New England's ACP to ensure Tier 2A resources will sell their renewable energy credits ("RECs") into New York instead of New England.

IPNNY states that the Cost Study Supplement does not contain any of the formulas elucidating how Staff approached the data to derive the Net Present Values ("NPVs") it then included in the Cost Study analyses. The Commission should direct Staff to disclose the formulas it used to derive the NPVs it published in the Cost Study, and to the extent different discount rates were applied, to explain the basis for each discount rate.

IPNNY believes that the Cost Study presents seemingly contradictory statements regarding the propriety of considering the effect of price suppression as an economic benefit. If Staff's estimation of New York consumers' bill impacts assumed the suppression of market prices, it should provide more detail on how that assumption affected the Cost Study's estimate. If, however, Staff does not wish to regard market price suppression as a benefit, it should provide information on what impact the CES is likely to have on consumers' bills absent any price suppressive effects. In either case, the Commission should direct Staff to resolve the Cost Study's inherent contradiction and adjust its estimates accordingly.

The Commission should not make any major decisions concerning the CES until Staff has provided stakeholders with the information requested herein and afforded them the opportunity to verify the reasonableness of the Cost Study's assumptions and the resultant conclusions. The moderate delay would allow the Commission and stakeholders to consider other relevant information, such as the Annual Energy Outlook ("AEO") for 2016, due to be released in early July.

Indicated Joint Utilities: Con Edison, Niagara Mohawk Power Corporation d/b/a National Grid, and Orange and Rockland Utilities, Inc. (JU)

The JU supports the CES objectives but believes that the Cost Study falls short of providing the Commission the full scope of information it needs to make key policy decisions.

The JU states that the Cost Study ignores critical implementation options that can reduce program costs, such as including the Utilities' proposed "Universal Renewables" procurement approach.

The JU provided a study conducted by Navigant Consulting (the Study) with their comments. The JU report that Study finds that Power Purchase Agreements (PPA) will raise costs for customers by 21 percent when compared to the Utilities' Universal Renewables model.

The Study and Cost Study align to demonstrate that technology-specific carve outs would unnecessarily increase costs for customers because both utility-scale solar and offshore wind resources become cost-competitive with other renewables by 2022 and 2028, respectively. They see the best approach is to allow technologies to develop on a competitive basis rather than to add cost earlier in the program.

The Cost Study and the Study do align to demonstrate that REC-market design can significantly affect program costs, making appropriate design of any ACP and other features critically important, including taking steps to encourage development of the voluntary market.

The Study demonstrates that retaining existing nuclear facilities will significantly reduce overall CES costs, especially those associated with reducing GHG emissions.

The Study, coupled with internal work by Con Edison, supplements the Cost Study analysis by demonstrating that transmission development will be an important component in achieving the State's renewable energy goals. The JU believes transmission build out will help maximize the State's ability to take advantage of renewable resources and reduce the use of other energy sources while maintaining reliability.

The Study demonstrates participation of deliverable out-of-state resources and Canadian hydro is another important element of an overall CES program, and enables a more affordable way to achieve the State's clean energy goals.

The JU supports the Cost Study's approach to evaluate near-term program implications, *i.e.* through 2023 and carrying

modeling out to 2030 would not be helpful in making policy decisions.

The JU notes that both the Cost Study and the Study appropriately attempt to account for some of the societal benefits of the CES program, but neither fully describes or accounts for these benefits. Both studies agree present estimates of economic impacts from the CES. The JU argues changes in the emissions of the full suite of criteria pollutants are not accounted for in the Cost Study, however, the Study attempts to bring these forward making possible some estimation of the public health benefits from the CES, but stops short of providing a full societal impact analysis.

The JU states that the Cost Study provides a benefit value for the social cost of carbon, and suggest that it would be more appropriate to show these values as separate benefits, along with estimates of other benefits, such as public health enhancements. The JU believes it can then be compared to the total costs that customers will pay for the CES through their electricity bills to keep costs and benefits separated in the consideration of this policy. Also, the JU offers perspectives on various modeling approaches included in the Cost Study, provide insights from the Navigant Study regarding the Levelized Cost of Energy ("LCOE") for various renewable technologies, and shed light on how inter-regional trading could change with the advent of the U.S. Environmental Protection Agency's Clean Power Plan and pending changes to the Regional Greenhouse Gas Initiative ("RGGI").

The JU notes, since the Cost Study was released, NYSERDA consultant revised its findings on procurement for large-scale renewable energy resources, and found that the Utilities' proposed Universal Renewables model is more cost effective than PPAs. Therefore, if the Cost Study were to use this model as the basis for its calculations, the CES would be even less expensive for customers.

The JU writes, contrary to the Cost Study's assumptions, the future of lower overall energy market prices may be more likely than not and this is because renewable resources have very low marginal costs and, as a result, their entry into the market will place significant downward pressure on energy prices.

The JU believes that the Cost Study's sensitivity concerning interest rates does not adequately address the impacts that changes to financial markets and the renewable energy industry could have on customers under a PPA model.

The JU argues that any analysis of the full costs associated with a renewable energy resource must account for the future residual value remaining for use after the end of a long-term contract. Under the Universal Renewables model, this value would accrue to customers. Under the PPA model, further contracts and out-of-market payments would be required to prevent the export of previously subsidized renewable energy resources. These costs will be significant, and should be accounted for when modeling total PPA costs.

The JU writes again disagrees with some commenters about automatic application of the State's policies related to ownership of conventional generation to ownership of renewable generation. The JU believes that the Commission's decision in the Competitive Opportunities proceeding that utilities should no longer play a direct role in the provision of generation for customers are not applicable relative to renewable generation.

According to the JU, renewable energy resources are *not* being developed in competitive markets, and are seeking regulatory support for development. Moreover, utilities are not developing resources on their own, but rather would rely on competitive developers to develop, design, and construct the assets. Furthermore, the intermittent and non-dispatchable attributes of renewable energy make it fundamentally different from conventional generation in that the owner does not have control over the plant's output. Regardless, because they have very low marginal costs, these resources will be price-takers in the market, further preventing any potential market manipulation. The Utilities believe that all of these reasons support the Universal Renewables model, which is further supported by the Navigant Study demonstrating that this approach is indeed best for customers, and best for meeting the 50x30 goal.

The JU reiterates their arguments about limiting customer choice, exercise of vertical market power by utilities, and anti-competitive behavior in favor of utility affiliates from the Competitive Opportunities proceeding are also misplaced. Vertical market power, should not be a concern because utility affiliates would be treated like any other competitive bidder in the procurement process as approved by the Commission. The JU argues that allowing utility affiliates to participate will bring more robust competition in the renewable generation market and bring the skills and knowledge of the non-utility affiliate's renewable development operations to the State.

The JU believes that technology-specific carve-outs that increase costs for customers are unnecessary. Both the Cost

Study and the Study demonstrate that these market structures are unnecessary because both solar generation and offshore wind become competitive with onshore wind before 2030. Carve-outs amount to nothing more than a way to provide additional and unnecessary subsidies, and added costs to customers, to specific renewable technologies and should be rejected.

According to the JU the Study shows significant build-out of distributed solar resources attributable to NY Sun and other policies. While the energy generated by these resources will play an important role in meeting CES targets and should count toward the 50x30 goal, RECs generated by these projects are already effectively being purchased through net metering and the grants provided by NYSERDA for their initial construction. The JU argues additional subsidies are not needed to bring these resources online.

The JU writes, it is important to note that the Cost Study and Study assume a renewable energy market free of distortion when estimating customer cost impacts. However, the JU recognizes that market design features, such as Alternative Compliance Payments ("ACPs"), carve-outs, and penalties all have the potential to increase program costs to customers as sellers include buyer constraints in their bids. The Study demonstrates the effect an improperly set ACP mechanism can have on renewable energy procurement. In that analysis, the JU reports the Study found that a fixed ACP set at Massachusetts prices would have raised program costs by $1.825 billion when compared to the NYSERDA cost-based contracting approach. The Navigant Study sheds further light on issues faced by other states as they have implemented REC markets. The JU recommends the Commission should weigh the potential unintended effects of any market structures against their purported benefits, and consider approaches such as an ACP that follows a "demand curve" approach as a way to manage cost, and encourage resources more with lower volumes.

The JU supports retaining existing nuclear plants will lower costs associated with reducing GHG emissions. The Cost Study shows nuclear energy contributing to more GHG emissions reductions than renewable energy resources through 2027 and the Study's modeling delivers similar results, indicating that earlier nuclear retirements will increase CO_2 emissions by 12 percent by 2023 and seven percent by 2030 when compared to a business as usual case.

The JU supports growth of energy efficiency because it will reduce CES costs because both the Cost Study and the Navigant Study indicate that energy efficiency will significantly decrease

program costs even after considering the costs of such EE programs.

The JU asserts that the Cost Study does not address the need for incremental transmission in order to deliver new renewable energy from the northern and western parts of New York to population centers in the Lower Hudson Valley, New York City, and Long Island. Similar effects are seen as additional renewable energy resources are built in the northern part of the State, though this energy does not have as direct a pathway into higher-priced regions. The JU sees these limits will directly impact the State's ability to reduce its GHG emissions because incremental renewable energy resources built in northern and western New York will not reduce emissions in the State. Rather those resources will offset emissions in PJM or reduce existing access to zero-emissions hydro resources, which may mean that New York customers are unable to realize future reductions in CO_2 allowance prices.

The JU recommends that the Commission should support the NYISO's efforts to begin a solicitation for public policy driven transmission needs that will efficiently deliver renewable energy across the state including to population centers.

The JU supports Staff's decision to limit the Cost Study assessment to a near-term period, *i.e.* through 2023. Significant uncertainty exists in the outer years due to a number of factors. Energy market prices are difficult to predict and the renewable energy industry remains in a period of rapid change, experiencing significant cost declines each year. Further, federal renewable tax policy continues to drive investment decisions in the industry, and is likely to evolve over time. All of these factors support a flexible approach that avoids locking customers into long-term contracts that cannot be altered.

Low Impact Hydropower Institute (LIHI)

LIHI strongly supports the CES and also, supports the comments made by organizations supporting hydropower and its societal benefits, and the inclusion of low-impact certification as a qualifying factor for inclusion in the CES. LIHI believes that low-impact certified hydropower maximizes the net benefits to New York residents.

LIHI suggests that a more comprehensive review of hydropower would result in a net benefit to consumers, rather than a net cost as has been asserted by the Cost Study, specifically, Tier 2B.

LIHI believes that Tier 2B hydropower analysis should be consistent with other Tiers and include an assessment of benefits, including the social cost of carbon.

LIHI states that the Cost Study omits the value of positive externalities, including carbon avoidance, in its evaluation of Tier 2B, even though it is considered in the evaluations of other technologies, and in its evaluation of hydropower in Tier 1 and Tier 2A.

LIHI argues that the Cost Study does not go into detail as to what benefits were considered for hydropower in Tier 1 or 2A. Further, the Cost Study omits consideration of benefits such as baseload capacity, peaking ability (the only renewable with this capability), recreational opportunities, flooding moderation, support to fish habitat, and migration both directly and indirectly, and the monetary support through taxes and payments in lieu of taxes to the New York communities they inhabit. LIHI emphasizes many times, these hydropower resources are the largest single tax payer for small rural communities.

LIHI notes that, Ampersand Hydropower included an estimate of avoided emission from small hydropower in New York, in its CES White Paper comments. Their estimate was 1.7 million tons of avoided carbon in 2014. Sox and NOx, particulate matter, and other pollutants were also avoided by these facilities as compared with their fossil counterparts. LIHI believes that with an estimated social cost of carbon at $36-69 per ton, the concrete benefits of these facilities should be included.

LIHI notes that Tier 2B analysis in the Cost Study presumes a REC price of $2.25 per MWh. The structure as proposed in Tier 2B may present facilities with the choice of either upgrading to export or retiring. Tier 2B analysis in the Cost Study results in a net cost to ratepayers. If hydropower’s total benefits are properly accounted for, the result should be a positive net benefit to consumers.

LIHI states that due to legislative changes in 2013 (An Act to Improve Hydropower, Public Law 113-23 – August 9, 2013), hydropower facilities that are less than 10 MW are often eligible for licensing exemptions. Also, the legislative changes in 2013 allow FERC to convert some licenses to exemptions when they are relicensed, that would mean that a thorough environmental review would never happen again.

LIHI notes that the Cost Study outlines its adjustments made to the ORNL Hydropower Potential Study in high-level terms. The ORNL study excluded sites that would produce less than 1 MW of power. The survey used in the Cost Study to triple the

number of potential sites did not consider permitting or siting restraints and LIHI recommends the decision to reduce the number of sites by half would need to be further understood.

Multiple Intervenors

Multiple Intervenors call upon the Commission to direct the preparation of a new study that corrects the flaws identified herein, and which is conducted in a more transparent manner, with an opportunity for public input and comment on the methodologies and assumption to be utilized.

Multiple Intervenors state that all data, assumptions, spreadsheets, work papers used in the creation of the Cost Study should be released for public review.

Multiple Intervenors believe that the Cost Study understates significantly the costs of implementing the proposed CES while, at the same time, overstating significantly its purported benefits.

Multiple Intervenors state that the costs of the proposed CES would be borne solely by New York electric customers. The purported benefits of the CES relied upon by the Cost Study relate solely to carbon reductions, calculated using the "social costs of carbon (SCOC), which theoretically would be realized by the world at large, of which New York constitutes only a very small portion thereof.

Multiple Intervenors state that the Cost Study is lacking in details and transparency, and that the Cost Study is not clear in parts as to what costs and benefits are being attributed to the proposed CES, and how those costs and benefits were calculated.

Multiple Intervenors state that the Commission should not rely on the Cost Study, in its present form, for purposes of evaluating the proposed CES. Instead, the Commission should direct Staff to conduct a new, rigorous, unbiased Cost Study that utilizes methodologies determined through an open, transparent stakeholder process.

Multiple Intervenors believe that the Cost Study understates significantly the costs of the proposed CES. The Cost Study focuses on costs only up until 2023, thereby disregarding substantial costs expected to be incurred after that time. Multiple Intervenors believe that this approach is highly questionable given that the CES is focused on achieving certain objectives as of 2030, and as proposed, would commit electric customers to expensive financial subsidies well beyond

that date. Multiple Intervenors state that the CES should not be mandated at this time, at least beyond 2023.

According to the Multiple Intervenors, the Cost Study focused on the costs to procure new renewable resources starting in 2020, not 2017 when the proposed mandates are scheduled to become effective. Multiple Intervenors state that there should be no doubt that new large-scale and smaller behind-the-meter (BTM) renewable resources are being counted toward the proposed CES targets. Subsidies paid to new large-scale and BTM renewable resources prior to 2020 will be counted towards the proposed CES so the costs associated should have been included in the Cost Study. Multiple Intervenors further state that, if the Cost Study is going to attribute carbon reductions occurring in the 2017-2019 period as benefits of the proposed CES, then, at a minimum, all of the costs associated with achieving such carbon reductions similarly should be attributed as costs of the proposed CES.

Multiple Intervenors argue that the Cost Study purposefully excludes consideration of substantial transmission-related costs, and also appears to understate the transmission-related costs that it does attempt to include in its analysis. Multiple Intervenors note that it seems premature to consider adopting the proposed CES without awaiting the results of an ongoing study that will identify the reliability impacts, and extent of bulk power system upgrades necessitated by the proposed CES. They suggest that transmission costs could total well into the billions of dollars, thereby offsetting and eliminating all of the benefits associated with the proposed CES. Multiple Intervenors note that for generator lead costs, the figures contained in the Cost Study appear understated. In addition, interconnection costs tend to be considerably higher than those included in the Cost Study.

The Cost Study assume that wholesale energy and capacity prices will rise in every NYISO load zone, and in every year through 2049. Multiple Intervenors state that such projections do not account adequately for recent sharp declines in energy prices. They argue that by utilizing an aggressively-high projection of future wholesale energy and capacity prices, the Cost Study underestimates the costs of the CES because the level of subsidies required for new and existing renewable generation facilities and existing nuclear generation facilities declines as wholesale energy and capacity prices rise.

Multiple Intervenors state that by subsidizing and increasing the State’s reliance on intermittent renewable generation technologies, implementation of the proposed CES

would have a highly detrimental impact on the State's Installed Reserve Margin (IRM). Multiple Intervenors believe that the Cost Study ignores completely the increased costs to customers associated with a higher IRM.

Multiple Intervenors assert that the Cost Study appears to utilize the load forecasts contained in the Staff White Paper and those forecasts are aggressively low and likely understated. Multiple Intervenors is concerned that by overstating the likely reductions related to energy efficiency, the Cost Study understates the State's likely electric load during the term of the CES, thereby understating materially the costs of the proposed CES.

According to the Multiple Intervenors, the Cost Study assumes that land based wind will be responsible for most of the renewable generation developed under the CES, particularly in the near term through 2023.

Multiple Intervenors believe that the Cost Study utilizes an over-inflated estimate of the average annual capacity factors for land based wind generation facilities. Multiple Intervenors state that when an appropriate annual capacity factor (i.e., 25% as opposed to 35%) is utilized to project the output of land based wind generation facilities, the costs of the CES will rise, likely by a material amount.

According to the Multiple Intervenors, the Cost Study excludes certain administrative and transactional costs. These are not assessed in this Study.

Multiple Intervenors state that the Cost Study appears to assume that 1% of the CES objectives would be satisfied through the voluntary procurement of renewable resources by loads. Multiple Intervenors believe that the 1% voluntary assumption contained in the Cost Study appears to have no purpose or justification other than serving to reduce artificially the projected costs of compliance with the proposed CES, it should be eliminated.

Multiple Intervenors believe that the Cost Study overstates significantly the benefits of the proposed CES.

According to the Multiple Intervenors the Cost Study is flawed because it fails to recognize or acknowledge the mismatch between the entities that would be forced to pay for the CES as proposed and the actual beneficiaries. The Cost Study massively overstates the benefits that are allocable or attributable to New York.

Multiple Intervenors believe that it is questionable whether implementation of the CES would result in any net reduction in greenhouse gas emissions due to the manner in which the Regional Greenhouse Gas Initiative (RGGI) currently is implemented. Multiple Intervenors state that, unless emission reductions in New York incremental to RGGI and related to the CES result in the permanent retirement of RGGI allowances, something that has not been proposed to date to Multiple Intervenor's knowledge, then it appears than the CES, if implemented, likely would result in zero or an immaterial amount of net emission reductions because reductions achieved in New York simply would increase the number of available allowances in the other RGGI states. Were that to occur, there would be little to no net carbon reductions encompassing the RGGI states, and the benefits claimed in the Cost Study would be entirely or largely illusory.

Multiple Intervenors state that there is considerable controversy over the EPA's estimates of the social costs of carbon (SCOC). The Cost Study is not clear as to what discount factor rate is being applied to the calculation of the SCOC. Multiple Intervenors believe that using similarly-high discount rates for the SCOC may eliminate the net benefits attributed to the proposed CES, even without remedying all of the other flaws in the Cost Study.

Newtrient

Newtrient states that biogas systems are operating in New York and other states in a commercially sustainable manner. With a 70-90% capacity factor, these baseload renewable energy systems are not only cost comparative with wastewater systems, but even with some wind and solar systems which operate at a fraction of the time as compared to the digesters.

Newtrient argues that biogas systems have a higher GHG reduction benefit when compared to other renewables and by keeping organic material from generating harmful GHGs in an uncontrolled manner and producing energy that displaces the use of carbon intensive fuels.

According to Newtrient, biogas systems provide many more benefits to air, water and soil quality than other renewables as well, is also not reflected in a renewable technology comparison that only looks at $/kW.

New York Solar Industries Association (NYSEIA)

NYSEIA believes that interim CES targets should be set now all the way through 2030, and should be more front loaded to

follow the successful best practices of other states like CA and reduce the cost of the CES by utilizing existing federal incentives.

According to NYSEIA, long term targets are essential for creating necessary stable/certain regulatory environment for large projects to be developed and financed.

NYSEIA is concerned that 2020 represents first year of large scale renewable project deployment under CES which is too slow to be optimally effective.

NYSEIA notes that increased targets in 2017-2023 would reduce costs by enabling large scale projects to take advantage of the federal tax incentive.

NYSEIA supports a solar sub-tier within tier 1 is needed to ensure large scale solar deployment.

NYSEIA states that long term bundled PPAs should comprise over 50% of Tier 1 procurement in the CES because of their effectiveness, minimal risk, and likely benefits.

According to NYSEIA, utility owned generation would be a step backward, would likely discourage private investment in New York, and unnecessarily increases the utility rate base, increasing costs and risks to ratepayers if a project were to underperform.

New York State Utility Labor Council, International Brotherhood of Electrical Worker, Local 97 and Utility Workers Union of America, Local 1-2 (Collectively "Labor Coalition")

The Labor Coalition strongly believes that nuclear generators will facilitate New York in achieving its goals of 40% reduction in greenhouse gas emissions and 50% renewables by 2030. As observed by The Brattle Group (submitted as an attachment to the comments) there are tremendous benefits attributable to Tier nuclear plants.

The Labor Coalition argues that Tier 3 will account for more than half of the carbon reduction benefits, while it will incur only about one fifth of the program's cost. The total economic and environmental benefits of preserving the upstate nuclear plants exceed program costs by more than a factor of 70.

The Labor Coalition strongly recommends that the Commission favorably include nuclear facilities in the mix of plants that will implement the Clean Energy Standard in New York.

According to the Labor Coalition, the Brattle Group's paper specifically details the tremendous contributions of New York's

upstate nuclear power plants to New York's economy through in-state jobs, lower electricity prices, increased local and state tax revenues and avoidance of 16 million CO_2 emissions.

The Labor Coalition maintains that if presently operating nuclear plants in New York would shut down, the resulting costs of fossil fired plant emissions contributing to global warming that would be needed to maintain reliable electric service would likely be more than any over-market commodity cost resulting from any aid necessary to maintain continued operations of New York State nuclear facilities.

The Labor Coalition notes that with regard to long-term Purchase Power Agreements, the Commission should be wary of supporting any long-term contracts that have the potential to result in above market rates similar to what transpired under New York's infamous 6 cent law.

The Labor Coalition supports utility ownership serves as a least cost alternative to the maintenance of electric system reliability in New York, as well as being a prime facilitator in achieving the particular social objective of facilitating the significant lowering of GHG emissions. The Labor Coalition agrees with the Indicated Joint Utilities that an absolute prohibition of utility participation in the ownership structure may not be in the interests of consumers. Also, the Labor Coalition disagrees with IPPNY and others who suggest that allowing any level of utility ownership at all will necessarily expose consumers to greater price risk or chill the development of competitive markets. The Labor Coalition asserts that utility-owned generation can serve as a correction to a potential failure of the market to develop sufficient levels of instate resources.

The Labor Coalition has concerns about Tier 1 assumptions in the Cost Study, regarding the cumulative GWh deployed by policy over the modeling period ending in year 2030, will actually be achieved given the history of projects undertaken during the New York State Renewable Portfolio Program.

The Labor Coalition believes that New York utility ownership of Large-Scale Renewables would provide the capacity to accelerate the Large-Scale Renewables market by achieving economies of scale in implementing a CES.

Nucor Steel Auburn, Inc. (Nucor)

Nucor states that none of the costs of procurement, compliance, interconnection, and required reliability support are all material that will be charged to ratepayers, and that it was not addressed in the CES.

Nucor believes that too many significant cost elements are missing, too many proposed findings (both explicit and implicit) are not disclosed or explained (*e.g.*, the presumed 39% load factor for new land based wind capacity), and there are notable assumptions that appear to be erroneous on their face.

Nucor states that comparatively low prevailing wholesale power prices do not excuse close attention to CES cost management today, and the CES Cost Study's reliance on trend-line escalation of future energy prices is a bad bargain for New York consumers that should not be pursued.

Nucor disagrees with the CES Cost Study's failure to include the cost of lowering the CES targets through energy efficiency programs in its analysis.

Nucor opposes adopting a PPA approach in the CES.

Nucor agrees that reliance on long range energy price forecasts is problematic and a basic reason why mandated twenty-year PPAs are such a poor procurement approach from a public policy and consumer perspective.

According to Nucor, economically inefficient electric usage, and particularly peak demands driven by weather sensitive loads, will be the Achilles' heel to the Commission's effort to realize the CES "50 by 30" goal.

Nucor states that several costs are not considered at all: capacity additions and incremental energy from RPS and NY-SUN; CES administrative costs for 2017 procurement and compliance obligations for utilities and LSEs; grid integration and network upgrades for land-based projects; large amounts of variable generation sources with low capacity factors and Tier 2 and 3 remaining useful assumptions.

Nucor notes that CES costs assessment for Tier 1 begins in the year 2020 and administrative, transaction, procurement and compliance costs would be incurred, but no costs are considered for the three year period prior to 2020.

Nucor recommends that in designing Tier 2A payments based on a PPA structure and "strategic" ACP payments levels designed to match or beat REC prices in New England will produce unnecessary and excessive costs and should be rejected.

Nucor believes that Tier 3 costs should be assessed on a unit-specific and year-to-year basis.

Nucor writes, for Tier 2A facilities, the CES Cost Study assumes that facilities are converted to PPA arrangements, but

it is not clear when this transition occurs from the data provided.

Nucor states that given the importance of land based wind installations to CES energy production, both overall and through 2023, it is important not only to comprehensively assess the costs associated with land based wind, but also to realistically appraise the production that should be expected from these facilities.

Oswego County Legislature: Shane Broadwell, Majority Leader

Oswego County Majority Leader, Shane Broadwell, joins others in support of the CES Cost Study, particularly, its assessment of Tier 3. The Majority Leader supports the Department's conclusion that preserving the upstate nuclear fleet is a cost effective bridge to a low carbon future for New York.

Pepacton Institute and Otsego 2000 (Otsego)

Otsego states that the Cost Study admits significant uncertainty regarding the future demand for electricity. Further, the increased use of electric vehicles and heat pumps require more electricity and the Commission should conduct a more detailed sensitivity analysis which evaluates the carbon implications associated with different levels of demand.

Otsego believes that there should be additional sensitivity analysis conducted with respect to the future of energy prices, because it is possible that the price of natural gas will increase much more than assumed in the high price scenario discussed in the Cost Study.

Otsego notes that the Cost Study refers to "carbon value," or "social cost of carbon." It is not clear whether this includes all carbon, power plant combustion emissions and other greenhouse gases, in particular methane, are assigned social costs. Otsego believes, sensitivity analysis should be incorporated with respect to social cost of all greenhouse gases, not simply "avoided tons of carbon" and "marginal carbon intensity".

Otsego supports that this is impetus to reconsider prior thoughts regarding the "back-loading" of projects since the federal incentives for both wind and solar have been extended to 2020.

Otsego asserts that the Cost Study does not appear to account for property tax impacts in the geospatial analysis of new projects.

Otsego is in favor of Tier 3 as a necessary and appropriate solution to prevent a dramatic increase in the use of natural gas, and to prevent the pumping of more carbon into the air.

Otsego states that it's not clear how Distributed Energy Resources (DER) are treated, and there are no apparent projections of new DER in the Cost Study. According to Otsego, at the technical presentation, it was stated that for simplification, staff did not model DER contribution. Otsego supports distributed generation that facilitates the expansion of renewables, but are very concerned that REV encourages the development of DER without regard to the energy source. Otsego believes that the State need to define what size of plant would be considered a central or distributed generator.

In addition, there will be significant additional societal costs if the expansion of DER increases the use of natural gas. Otsego believes that this should be studied. Otsego is concerned that other environmental or societal costs and benefits are not included in the Cost Study. The fact that they are "difficult to quantify" is not an acceptable reason to ignore them.

According to Otsego, administrative and transactional costs must be assessed as well.

Otsego believes that a comprehensive assessment of macroeconomic costs and benefits has not been conducted. This is a concern due to the likely price increase and potential export growth of natural gas, both of which may have a substantial impact on macroeconomic conditions. Because there is a consensus that renewable energy development creates more jobs per unit of energy than fossil fuels, Otsego recommends that such benefits should be taken into account.

RENEW Northeast, Inc. (RENEW)

RENEW urges the Commission to issue its Order on the Large Scale Renewable energy procurement program this summer, as planned.

RENEW believes the program should consist of long-term contracting of energy and renewable energy certificates (RECs).

RENEW states that long-term contracting for renewable energy will enable the state to meet cost effectively the 2015 New York State Energy Plan's goal of 50% renewable energy installed by the year 2030 and greenhouse gas reduction targets.

RENEW agrees with NYSERDA's Options Report dated June 1, 2015, and recommends the Commission adopt the Staff's White Paper's Option 3A approach with PPAs as the sole approach to

replace the existing NYSERDA central procurement model for Main Tier resources. RENEW suggests Option 3A be modified, so that NYSERDA conducts the solicitation, rather than the EDCs as stated under Option 3A. Under this approach, NYSERDA selects the winning bidders, potentially in consultation with the EDCs, and directs the EDCs to enter into contracts with them subject to Commission approval.

RENEW supports consolidation of sub-tiers 2A and 2B into a single Tier 2, in the interest of promoting competition.

RENEW states that the Indicated Joint Utilities Reply Comments dated May 13, 2016 have challenged the conclusion in the Options Paper on EDC long-term contracting for renewable energy being the least-cost model, apparently relying upon their own "cost study." This comment by the Indicated Joint Utilities should be disregarded, until the Indicated Joint Utilities provide the full study, as well as, detailed information on the assumptions, inputs and methodologies behind the study.

Renewable Energy Industry: Submitted by: The Alliance for Clean Energy New York, American Wind Energy Association, Advanced Energy Economy Institute, Solar Energy Industries Association, New York Solar Energy Industries Association, Northeast Clean Energy Council, and Vote Solar (REI)

REI believes the primary finding of the Cost Study is that the CES will have an overall modest impact on ratepayer electric bills, consistent with national studies. Recognizing that comparison of different renewable energy portfolio standard (RPS) policies across states is complicated by a variety of targets and policy designs, REI believes that it is worth noting that the Cost Study findings is roughly on target with other assessments of RPS impacts.

REI states that the Cost Study illustrates that Power Purchase Agreements (PPAs) are the most cost-effective procurement approach and are a tried and true procurement structure that can accelerate renewable development activity to scale necessary to achieve the 50% goal.

REI supports some portion of the CES obligation being structured under REC-only contracts. REI states that requiring the State's electric distribution companies to enter into long-term bundled PPAs would allow this hedge value to be passed on to ratepayers who would otherwise be exposed to volatile and/or increasing electricity prices.

REI argues that, including the value of avoided carbon emissions in a cost-benefit analysis is appropriate, but it is

not a complete picture of the benefits of renewable energy. By focusing solely on carbon, the Cost Study underestimated the total benefits and the net program benefits of New York's proposed CES.

REI believes that the Cost Study did not integrate a quantification of economic benefits, which is a meaningful source of underestimation of the total net benefits of the CES. Creation of the 50% CES will be a clear market signal to this industry that will result in further job growth.

REI states that several types of benefits were left out of the analysis, including non-carbon avoided emissions, water use reduction, economic impacts, and price suppression impacts.

REI argues that the Cost Study findings in regard to load reductions highlights the need for binding energy efficiency targets. REI recommends that setting targets for energy efficiency in a similar way to setting targets for renewable energy can help reduce the overall system cost of the renewable energy mandate. With greater investment in energy efficiency, the overall system would require less investment in transmission and reduce costs for all customers.

REI believes that the Cost Study findings regarding tax credits highlight the need for 2017 procurement and a schedule of evenly distributed targets, rather than back—loaded targets.

REI strongly suggests that the first procurement takes place in 2017, to take advantage of federal tax credits prevent any market disruption. In addition, the procurement must be front-loaded, not be back-loaded.

REI strongly recommends that the Commission set annual compliance targets out to 2030 with the option to review targets as needed, rather than, setting the goals every three years to create certainty in the market.

REI writes that renewable energy technologies have experienced dramatic cost reductions in recent years and will continue to do so. Integrating cost reductions into the Cost Study is therefore appropriate and necessary, and reflects a more accurate future landscape.

Smart Wires, Inc. (Smart Wires)

Smart Wires states that analysis of the transmission system is needed, and emerging technologies exist and should be supported to more fully realize REV benefits to the State. Innovative new technologies exist that can help address New York's transmission needs while promoting a cost-effective,

flexible grid system. Advanced transmission technologies, such as Smart Wires' advanced power flow control can utilize the existing grid infrastructure, reduce the environmental impact of transmission improvements, ease the integration of renewable energy resources into the transmission system, and reduce curtailment of renewable energy.

Smart Wires notes, failure to consider the impact of new generation on the transmission system would preclude the Commission from fully evaluating costs that will be incurred in the process to increase generation, as well as, the environmental and geographic factors that would enable better decision making in renewable energy planning.

Smart Wires requests that the Commission analyze CES and REV implications to the New York transmission system and support technologies that can enable a cost-effective, flexible grid.

Smart Wires requests that the Commission initiate an effort to better understand the impacts and opportunities of the CES and REV on transmission congestion. The Commission could engage with other state entities, including NYISO and NYSERDA, which are responsible for transmission and energy technology programs. The Commission could also work with NYSERDA to evaluate how innovative transmission technologies can enhance state benefits and alleviate uncertainty in investments in the CES and REV.

While, traditional power flow control devices are included in planning models, there are aspects of advanced power flow control technologies, such as the modular and easily dispatchable nature of the products that are not always represented in current transmission planning processes. Advanced power flow control technologies push or pull electric power flow around transmission constraints. By not including this tool in transmission planning, ratepayers fail to experience the benefits that these technologies.

Smart Wires believes that advanced power flow control technologies, such as Smart Wires, can be a key element of the transmission planning process and lead to solutions that optimize capital expenditure, improve the integration of renewable energy, address uncertainty in planning transmission, and reduce network congestion. Smart Wires works closely with utilities and transmission-owners to design and develop a dynamic grid that is reliable, affordable, safe, and clean.

SRECTrade (SREC)

SREC recommends the Commission should further evaluate other market models that could support more robust growth of

distributed energy resources (DER), and distributed solar in particular. SREC notes that, their comments may fall more appropriately under the related DMM Case No. 15-E-0751, but believes that it may greatly impact the overall conclusions of the Cost Study.

SREC requests that the Commission further assess the costs associated with the current DER and Main Tier programs, and consider potential alternative models that could more cost effectively enable the State to achieve its renewable energy goals.

SREC reviewed national RPS carve-out compliance in the 2012 to 2014 years, and found that New York is among the least successful in meeting its carve-out targets. According to the Lawrence Berkeley National Laboratory New York is the least successful year-over-year in meeting its carve-out targets, and similarly, New York's success in meeting its primary-tier RPS obligations in 2012-2014 fell in the 40% to 60% range. Therefore, SREC believes that the Cost Study's assumption that the existing REV program and Main Tier solicitation will successfully meet the CES target up to 2019 is an aggressive assumption for the purposes of this Cost Study, and believes these goals should be more closely evaluated by the Commission.

SREC urges the Commission to consider alternatives to the REV model, because it may better enable New York to achieve its overall CES standards. New York could adjust its CES to incorporate a solar carve-out to more appropriately incentivize the development of distributed solar PV.

SREC states that the costs of these alternative models would need to be assessed and incorporated into the overall cost-benefit analysis, in order to design the best blend of policies for the future of renewable energy growth and adoption in the State of New York.

SREC states that, as it stands, the Cost Study fails to fully analyze and assess the cost of the current DER model, and therefore cannot comprehensively assess the overall cost of the State's renewable energy programs.

SREC asserts that DER and distributed solar PV in particular are an extremely important and valuable component to the renewable energy growth of the State, and should not be undervalued in either cost or benefit.

Transmission Developers Inc. (TDI)

TDI fully supports the CES White Paper and the Cost Study, and believes that the CES should allow Large Scale hydropower (L-S Hydro) to serve as a qualifying resource.

TDI supports imported L-S Hydro, and that it will be an important contributor to the State's clean energy future.

TDI states that the Cost Study properly acknowledges the competition for clean energy supply within the Northeast Region and specifically between New York and New England.

Upstate Energy Jobs

Upstate Energy Jobs states that New York can't achieve its environmental goals without preserving existing nuclear plants.

Upstate Energy Jobs agrees that the DPS correctly concluded the benefits of the nuclear tier which greatly exceed costs, as several independent analyses confirm, such as, the study by the Brattle Group. According to Upstate Energy Jobs, the Brattle Group also found that the DPS analysis substantially underestimated the net benefits from the nuclear tier, as it only considered environmental benefits and not economic benefits.

Upstate Energy Jobs notes that large decline in energy prices means that now is the time to invest in clean energy.

Upstate Energy Jobs believes that the structure of nuclear tier proposal ensures that consumers will not overpay.

Vanguard Renewables

Vanguard Renewables is disappointed that non-wastewater biogas systems were left out of the DPS CES White Paper – Cost Study.

Vanguard Renewables state that biogas systems are commercial and operational in New York and have a 70-90% capacity factor.

Vanguard Renewables believe that biogas systems have a higher GHG reduction compared to other renewables, because these systems keep organic material from generating GHGs.

Vanguard Renewables disagrees with the Cost Study that biogas systems have higher costs and only a few are commercially operational.

Vanguard Renewables states that not all renewable energy technologies are created equal when it comes to the actual

energy produced (kWh) compared to their rated capacity (kW). Biogas system capacity factors are usually about 90% but can range from 75-95%. Consequently, Vanguard Renewables believes that for a fair comparison of renewable energy technologies, capital cost standardized to energy generation potential (i.e., $/kWh) must be used, especially since this metric is more closely linked to the stated policy objectives.

Vanguard Renewables refutes the study's statement that only a few systems are operational. New York ranks #7 among all states for biogas generation potential and currently has 221 operational biogas systems: 117 at water resource recovery facilities; 61 at landfills; 35 on farms; 6 stand-alone food waste only digesters and 2 at industrial facilities (e.g., Anheuser-Busch Brewery). Vanguard Renewables believes it is essential that the Study recognize the valuable role biogas systems play, not only for renewable energy, but for the additional benefits to air, water, soil and the economy that they bring.

Entities that Commented on Staff's Responsive Proposal

Business Council of New York State
E Cubed Company
Public Citizen, Inc.
Indicated Suppliers: Astoria Energy II LLC; Astoria Energy LLC; BP Energy Company; CCI Rensselaer LLC; Calpine Corporation; Cogen Technologies Linden Venture, L.P.; Direct Energy Services LLC; Mercuria Energy America, Inc.; Roseton Generating LLC; Selkirk Cogen Partners, L.P.; Shell Energy North America (US), L.P.; Sithe/Independence Power Partners, L.P.; US Power Generating Company LLC.
Citizens' Environmental Coalition
Binghamton Regional Sustainability Coalition (with 110 cosigners including elected officials and various organizations)
oneGrid
Town of Scriba
Town of Ontario
Environmental Progress
Retail Energy Supply Association
New York Independent System Operator (NYISO)
Alliance for a Green Economy (AGREE), Council on Intelligent Energy & Conservation Policy, Nuclear Information and Resource Service, Sierra Club Atlantic Chapter
National Energy Marketers Association
Entergy
Ampersand Hydro
Upstate Energy Jobs
New York Association of Public Power
Pace Energy and Climate Center
Nucor Steel
American Petroleum Institute
Multiple Intervenors
City of New York
City of Kingston
Joint Utilities (Central Hudson, ConEd, O&R)
Constellation Energy Nuclear Group
Multi-Party Comments of: The Council on Intelligent Energy & Conservation Policy (CIECP); Promoting Health and Sustainable Energy (PHASE); Manhattan Project for a Nuclear-Free World; and the Indian Point Safe Energy Coalition (IPSEC).
Niagara Mohawk Power Corporation/ National Grid
Institute for Policy Integrity at NYU School of Law
Public Utility Law Project
Potomac Ecomonics

Sarah Imboden, Council Member, Town of Red Hook
County of Oswego Industrial Development Agency
NYPIRG, Reinvent Albany, Common Cause NY, League of Women Voters of NYS
Brooklyn Hispanic Chamber of Commerce
Wayne County Board of Supervisors: Debbie Liseno, John Testa
ArtsWestchester
Nuclear Energy Institute
Natural Gas Supply Association
Greater Oswego-Fulton Chamber of Commerce
United Union of Roofers, Waterproofers and Allied Workers, Local #195
Assembly Member William Barclay, 120th District
Assembly Member Ellen C. Jaffee, 97th District
Assembly Member Philip Palmesano, 132nd District
Assembly Member Amy Paulin, 88th District, Chair
Assembly Member J. Gary Pretlow, 89th District
Assembly Member Robert Oaks, 130th District
Assembly Member Barbara Lifton, 125th District
Assembly Member Addie Russell, 116th District
Senator David Carlucci, 38th District
Senator David Valesky, 53rd District
Senator Thomas O'Mara, 58th District
Senator Rich Funke, 55rd District
Senator Patty Ritchie
WNY Peace Center
Energy21
Nuclear Renaissance Services
Uptown Ventures Group
New York City Hispanic Chamber of Commerce
Rev. John Long, First Presbyterian Church
Protect Orange County
International Brotherhood of Electrical Workers Local 86
Today's Students Tomorrow's Teachers
Rochester Building and Construction Trades Council
Nuclear Energy Information Service
New York State Utility Labor Council
Californians for Green Nuclear Power
New York AREA
New York Power Authority
New York State Building and Construction Trades Council
Alliance Energy of New York LLC
Rochester and Genesee Valley Area Labor Federation
Otsego 2000
Long Island Power Authority
Ethical Electric d/b/a CleanChoice Energy
North America's Building Trades Union.

Clean Energy Standard
Summary of Comments Related to
Staff's Responsive Proposal

City of Kingston

The City of Kingston equests an extension of deadline to submit comments. Believes the substantial changes in the Responsive Proposal merit a new State Administrative Procedures Act (SAPA).

Sarah Imboden, Councilmember, Town of Red

Ms. Imboden reiterates comments from the City of Kingston requesting additional time to consider the proposal.

John Testa, Westchester County Legislator, Minority Leader

Mr. Testa supports the Staff proposal for the Zero Emissions Credit (ZEC) of the Clean Energy Standard. He cites a Brattle Group study which states that continued operation of the Fitzpatrick, Nine Mile, and Ginna facilities will maintain 25,000 jobs and $3 billion in economic activity. Mr. Testa also states that the proposal will allow time to implement the 50% by 2030 renewable portion of the Clean Energy Standard.

L. Michael Treadwell, County of Oswego Industrial Development Agency (CEO)

Mr. Treadwell support's the Staff proposal. He states that three of the state's six nuclear power plants are located in Oswego County. He argues that Oswego County is the most affected community in New York State in regards to potential closure of the facilities due to the current financial difficulties that upstate nuclear-powered generators face. Mr. Treadwell concludes that a Clean Energy Standard that values zero emissions attributes, like nuclear power plants, will provide the certainty to keep these facilities operating and contributing to the local community, the state's electric supply, and the environment.

Brooklyn Hispanic Chamber of Commerce

Mr. Miranda supports the Staff proposal because it recognizes the actual and real-time benefits of nuclear power generation. He argues that the proposal supports the state's emissions stewardship, protects the energy market from over-reliance on fossil fuels, promotes the upstate economy, and allows the state to implement the 50% by 2030 renewable portion of the Clean Energy Standard. Mr. Miranda notes that if the

value of upstate nuclear power plants is not recognized, higher long-term energy costs, capacity costs, and emissions will result. He also notes that the ZEC proposal balances energy, economic, and environmental realities in the short, medium, and long-term time spans.

Debbie Liseno, Wayne County Board of Supervisors

Ms. Liseno provided a copy of a resolution passed by the Wayne County Board of Supervisors which supports the environmental values and attributes of zero-emissions nuclear powered generating facilities. The resolution cited benefits of the state's nuclear power facilities including offsetting 31 million tons of C02 emissions over the next two years with a societal cost of $1.4 billion, economic benefits of $1.7 billion per year, and an average of 2,600 well-paying jobs. The resolution concludes that the legislative bodies of the counties of Oswego and Wayne urge the Commission to incorporate Staff's proposal for preserving zero-emissions attributes into the final order in Case Number 15-E-0302 and that this order be issued as soon as possible.

NYPIRG, Reinvent Albany, Common Cause NY, League of Woman Voters

Ms. Horner filed a letter on behalf of Reinvent Albany, NYPIRG, Common Cause NY and the League of Women Voters of NYS, to request an extension of time for the public comment period on the adoption of a Large-Scale Renewable program and Clean Energy Standard to 45 days.

Ann Fabrizio, ArtsWestchester

Ms. Fabrizio writes to express her support for the Staff proposal. She cites benefits for the continued operation of upstate nuclear power plants that include providing support for as many as 25,000 jobs and $3 billion in economic activity. Other benefits cited by Ms. Fabrizio include fuel diversity, power reliability and the balancing of energy, economic, and environmental concerns over the long-term.

Nuclear Energy Institute

The Nuclear Energy Institute (NEI) supports the Staff proposal. NEI indicates the proposal will send the correct price signal to continue operation of nuclear plants, and cites the proposal as inspiration for Constellation Energy Nuclear Group's announcement to invest $200 million towards long-term operation of the Ginna and Nine Mile nuclear plants, as well as announcements that Entergy Corporation is in discussions with Exelon Corporation to sell the FitzPatrick nuclear plant. NEI

indicates that this sale is predicated on New York State having an approved Clean Energy Standard.

In regards to environmental goals, NEI states that the loss of even one nuclear plant would compromise the state's ability to meet its goal of a 40 percent GHG emissions from 1990 levels. In regards to nuclear benefits, NEI cites Staff's benefit to cost ratio of retaining at-risk nuclear plants for the first two years of the program are in excess of five to one, and also cites a Brattle Group study with various economic benefits. NEI argues that nuclear generation has been replaced by natural gas with corresponding C02 emissions increases, citing nuclear generation reductions in ISO-NE and California. NEI argues that New York State's existing wholesale energy markets do not adequately compensate nuclear generation for providing zero-emission, safe, and reliable baseload electricity, and as a result, some nuclear plants are struggling to continue operation.

NEI is encouraged that the Staff proposal uses the social cost of carbon as the starting point for determining ZEC values, to ensure a price signal that will value nuclear energy in meeting New York State goals. NEI also notes that the 12-year duration of the proposal provides a durable price signal that reduces uncertainties that would inhibit an owner from making long-term investments.

Natural Gas Supply Association

The Natural Gas Supply Association (NGSA) opposes the Staff proposal, stating that the Commission should allow market forces to establish a path for carbon reduction. NGSA argues that the Staff proposal is discriminatory by not rewarding other facilities for their contributions to carbon emissions reductions, will be costly for consumers, and is preempted by the Federal Power Act. NGSA recommends that the Commission not accept a proposal that will provide subsidy-style payments for specific sources of generation. NGSA characterizes a ZEC payment as being "out-of-market" and cautions that this type of payment will distort the wholesale electricity market. In regards to renewables development, NGSA argues that the ZEC proposal would impact the development of natural gas generation, which is essential to supporting intermittent renewable generation. NGSA notes that the Staff proposal's expectation that rising natural gas prices will lead to higher energy prices in New York is misplaced, citing a 0.9% forecasted increase in gas prices between 2015 and 2040 from the Energy Information Association's 2016 Annual Energy Outlook. NGSA notes that fuel diversity is essential, and that natural gas remains the most economically

and environmentally sound power generation investment available today, and should not be disadvantaged through a market subsidy. NGSA claims that market-driven natural gas has helped the United States achieve power sector carbon emissions reductions that were 19 percent below 2005 levels. NGSA urges the adoption of three principles in order to preserve competitive market signals while achieving carbon reduction objectives: implementation flexibility, fuel and technology neutral incentives, and the fostering of regional market interdependencies. NSGA cautions the Commission that the ZEC proposal intrudes on FERC jurisdiction as outlined in the Supreme Court decision, Hughes v. Talen Energy Marketing, LLC.

Greater Oswego-Fulton Chamber of Commerce

The Greater Oswego-Fulton Chamber of Commerce is supportive of the Staff proposal, and cites a Brattle Group study to list benefits.

United Union of Roofers, Waterproofers and Allied Workers, Local #195

The Roofers Local # 195 is supportive of the Staff proposal, and cites a Brattle Group study to list benefits.

Assembly Member Ellen C. Jaffee, 97th District

Assembly member Ellen C. Jaffee, of the 97th AD, states that the proposal to impose a nearly $8 billion nuclear tax on ratepayers is unacceptable and is being pushed with undue haste. She claims the premise of the order is scientifically inaccurate; that nuclear energy is not renewable or emission free as it requires uranium as fuel, significant water resources, and produces waste in the form of thermal pollution, radioactivity, and nuclear waste. She indicates the PSC has not considered the costs and risks of producing nuclear waste. She states that the PSC has not provided cost/benefit analysis comparing job creation from investment in solar, wind, geothermal, efficiency, and storage vs. the nuclear industry, nor cost/benefit analysis regarding increased health costs due to continuing nuclear waste production. She requests that the State Legislature be given the opportunity to oversee the process.

Senator David Carlucci, (38th District)

Mr. Carlucci reiterates the request for an extension submitted by the City of Kingston.

Chuck Cuhane, WNY Peace Center (Board Member)

Mr. Culhane states that New York should follow California and Illinois and replace aging, dangerous, unprofitable nuclear power with safe, clean, and profitable renewable energy.

Assembly Member Robert Oaks, 130th District

Mr. Oaks is supportive of the Staff proposal. He notes that nuclear power has been challenged in the past few years by changes in the energy markets, and cites Ginna as an example. Mr. Oaks argues that nuclear power is critical in providing a bridge to the future goals of lower carbon emissions and greater reliability on renewables. He estimates that if only Ginna were lost as a power source, the state would wipe out all the non-carbon progress it's made in the past decade. Mr. Oaks suggests that the Staff proposal has spurred a discussion between Entergy and Exelon, which might lead to a transfer of operation for the FitzPatrick plant, retaining a carbon-free energy resource.

Rhea Jezer, Energy21

Mr. Jezer applauds the Staff proposal in its appreciation of the social cost of carbon. He states that closing down safely operated nuclear facilities, especially in Central New York, would be unwise because their output would be replaced with natural gas, thereby increasing greenhouse gas emissions.

Patrick Falciano, Nuclear Renaissance Services (President, former Entergy employee)

Mr. Falciano is states that nuclear power, including Indian Point, must be included in the state's Clean Energy Standard.

Len Burnett, Uptown Ventures Group (Co-Founder)

Mr. Burnett is supportive of the Staff proposal, and cites a Brattle Group study to list benefits.

Nick Lugo, New York City Hispanic Chamber of Commerce (President)

Mr. Lugo is generally supportive of the Staff proposal.

Assembly Member Philip Palmesano, 132nd District

Mr. Palmesano is supportive of the Staff proposal. He cites a recent Brattle report to list the benefits of nuclear power resources in New York State.

Rev. John Long, First Presbyterian Church

Rev. Long opposes any expenditures to nuclear energy plants. He states that no other state subsidizes in this way, and that subsidization would extend the life of nuclear energy

in New York at a time when all emphasis and subsidies should go to renewable energy. Rev. Long also notes that the cost is high.

James Cromwell, Protect Orange County Date Filed:

Mr. Cromwell opposes the Staff proposal in a similar fashion as Senator Carlucci

David Young, Jr., International Brotherhood of Electrical Workers Local 86, (Business Manager)

Mr. Young states that the International Brotherhood of Electrical Workers (IBEW) has spent much time studying the impact of upstate nuclear power plants with various independent companies, and that after gathering evidence on the short, medium, and long term goals of the Staff ZEC proposal, the IBEW finds that the net benefit to New York State would be substantial in order meet Clean Energy Standard goals. Mr. Young also notes that the Staff proposal would heavily impact the more than 2,600 workers at these plants. Mr. Young argues that the failure to recognize the value of upstate nuclear power will result in higher energy costs and higher emissions.

Bettye Perkins, Today's Students Tomorrow's Teachers, (Founder)

Ms. Perkins is supportive of the Staff proposal.

David Young, Rochester Building and Construction Trades Council, (President)

The comments of the Rochester Building and Construction Trades Council echoes those of IBEW Local 86 filed on 7/22/16 in their support for the Staff proposal.

Kathleen Rude, Nuclear Energy Information Service, (Board Member)

Ms. Rude repeats Mr. Noble's comments (from the City of Kingston, filed on 7/18/16). She also notes that nuclear energy is dangerous and that direct monies should be contributed towards renewables and conservation.

New York State Utility Labor Council

The New York State Utility Labor Council (NYSULC) is supportive of the Staff proposal, and cites a recent Brattle Group study to list several benefits. NYSULC agrees with the Staff proposal on several points, including: C02 impact in case of loss of retention of nuclear power resources, the methodology to determine when a public necessity exists to encourage preservation of zero carbon emission electric generating facilities, the idea of a ZEC cap amount, and the administration of ZECs between NYSERDA and load serving entities.

Gene Nelson, Ph.D, Californians for Green Nuclear Power

Dr. Nelson supports the program. Comparing California's choice to shutdown its last nuclear plant, Dr. Nelson suggests California should follow New York's lead and provide a ZEC to its nuclear generators.

Arthur "Jerry" Kremer, New York AREA

Mr. Kremer supports the Staff proposal and states that New York needs to support all six of its non-carbon emitting nuclear power plants. He notes that New York State's nuclear power plants provide 32 percent of the state's electricity and 60 percent of the state's zero-carbon generation.

Assembly Member J. Gary Pretlow, 89th District

Mr. Pretlow is supportive of the Staff proposal.

Senator David Valesky, 53rd District

Mr. Valesky is supportive of the Staff proposal. He states that during the past decade, the state has developed 2,000 MWs of renewable resources, but that in order to meet the 50% by 2030 goal, the state will require an additional 30,000 GWh per year. Mr. Valesky also describes the 2,600 jobs that are supported by the Nine Mile and FitzPatrick nuclear power plants.

New York Power Authority

The New York Power Authority (NYPA) supports the Staff proposal. NYPA believes that retaining nuclear generators is essential for the success of the state's clean energy and greenhouse gas emissions reduction initiatives.

Senator Rich Funke, 55rd District

Mr. Funke is supportive of the Staff proposal. Mr. Funke states that upstate New York is host to many low or no carbon resources including three nuclear facilities, and that these facilities will be a critical supply source for New York State to meet its immediate and long term climate commitments. Mr. Funke appreciates the use of the social cost of carbon in valuing upstate resources. Mr. Funke refers to the high benefit-to-cost ratio in the Staff proposal in order to weigh the cost of the ZEC proposal against the cost of the retirement of high capacity factor carbon-free resources. Mr. Funke concludes by estimating the employment impacts of nuclear facilities in the State of New York.

New York State Building and Construction Trades Council

The New York State Building and Construction Trades Council supports the Staff proposal.

Alliance Energy of New York LLC

The Alliance Energy of New York LLC (AENY) opposes the Staff proposal. AENY supports the State's goals of decreasing greenhouse gas emissions and increasing the State's reliance on renewable energy, but believes these goals should be consistent with a competitive wholesale market at the lowest cost to ratepayers. AENY states that the Staff proposal is an abandonment of the Commission's commitment to a competitive wholesale market due to massive subsidization of an uneconomic market participant. AENY suggests that the Commission more fully explore wholesale competitive market options.

AENY's recommendations to the Commission include: excluding units with RSSAs, require a reliability assessment of qualifies units, cap the subsidies at historical levels not based on the social cost of carbon, adopt generation historical data that will serve as a subsidy cap and allow for public disclosure and comment, coordinate with EPA so that ZECs will be credited for compliance under the Clean Power Plan, eliminate subsidies upon adoption of market reforms that reflect the value of the benefits of large-scale renewable resources, reevaluate the design of the subsidies every two years, and require transparency and public participation opportunity at the same level as an RSSA. AENY argues that the Commission should reject the Staff proposal because the public interest is not limited to C02 emissions.

AENY notes that the CES White Paper did not propose a massive subsidy, instead relying on ZEC pricing based upon the difference between operating costs and forecasted wholesale prices. AENY argues that although the EPA has used the social cost of carbon to support rulemaking, it has not been used as the basis for setting a subsidy. AENY contends that ratepayers can obtain the benefits of zero-carbon emissions generation by paying the marginal cost of abatement through a program like RGGI. AENY explains that the Staff proposal is incomplete because it does not represent a complete formula. AENY indicates that the EPA rejected the notion that preserved generation from existing nuclear-generating capacity at risk of retirement is the best system of emission reduction.

Rochester and Genesee Valley Area Labor Federation

The Rochester and Genesee Valley Area Labor Federation supports the Staff proposal.

Senator Thomas O'Mara, 58th District

Mr. O'Mara is supportive of the Staff proposal.

Otsego 2000

Otsego 2000 supports the Staff proposal. Otsego 2000 analyzes the cost required to replace existing nuclear facilities with renewable resources. Otsego 2000 commends Staff on its use of the social cost of carbon in decision-making.

Long Island Power Authority

The Long Island Power Authority (LIPA) supports the goal of Staff's proposal to maintain the benefits of the subject nuclear facilities. LIPA recognizes that keeping those plants in operation would avoid significant additional costs to replace the zero emission electricity that those plants produce. LIPA Staff intends to seek the approval of its Board of Trustees to enter into the necessary agreements to procure its appropriate share of zero emission credits and to receive its appropriate share of such revenues as co-owner of the Nine Mile Point 2 Nuclear Station.

Ethical Electric d/b/a CleanChoice Energy

CleanChoice Energy is an ESCO that is concerned that Staff's proposal to subsidize nuclear facilities undermines New York State's goal of 50% renewable energy generation by 2030. Specifically, ClearChoice Energy argues that ESCOs that provide 100% renewable energy to their customers should not be required to purchase ZECs that subsidize nuclear facilities.

ClearChoice Energy notes that while nuclear power is zero-emission, it is not a renewable resource, and therefore, to the extent that LSEs that provide renewable energy to customers are forced to subsidize nuclear resources, there will be a double payment. ClearChoice Energy describes this double payment as a payment once through their contracted price for renewable energy, and again through the ZEC program. ClearChoice Energy proposes a narrow exception to Staff's proposal that would exempt ESCOs that provide 100% renewable energy to their customers from mandated participation in the ZEC obligation. ClearChoice Energy provides modification language to this effect.

North America's Building Trades Unions

North America's Building Trades Unions supports the Staff proposal.

Assembly Member Barbara Lifton, 125th District

Ms. Lifton is opposed to the Staff proposal. She cites the estimated cost of the subsidy at $7.6 billion. Ms. Lifton is concerned about the amount of transparency and the time available for review of the proposal. Ms. Lifton explains that

the simplest way to reduce emissions is to use less energy, to focus on energy demand. Ms. Lifton states that nuclear energy does not qualify as renewable. Ms. Lifton contrasts the Staff proposal's language regarding the effect of nuclear plant closures on C02 emissions to a New York Independent System Operator study stating that the certain nuclear plants can be retired with no impact to electric reliability. Ms. Lifton explains that renewable energy and energy efficiency can be purchased at lower cost than the amount requested for nuclear subsidies.

Public Citizen Inc.

Summary: Public Citizen Inc. strongly opposes the Staff proposal. Public Citizen argues that the ZEC proposal inappropriately and expensively transfers risk away from corporate shareholders to New York State ratepayers. Public Citizen Inc. requests that the owners of the nuclear power plants make available full unredacted balance sheet data since their acquisition so that the public can have a better understanding of their profit and so that ZECs can be properly formulated. Public Citizen Inc. provides background on nuclear plant profits.

Citizens' Environmental Coalition

Citizens' Environmental Coalition opposes providing subsidies for nuclear generation and suggests that Staff's proposal has no environmental impact analysis or analysis of alternatives. The Coalition suggests it would be more cost-effective to invest in renewable energy solutions.

OneGRID

OneGRID submits comments in support for a New York CES and further indicates that it is currently developing its "Empire State Connector" 1,000 MW HVDC transmission line from Marcy to Gowanus (expected in-service date: 2021/2022). OneGRID indicates this asset will assist in meeting renewable energy goals by linking new and developing upstate renewable capacity resources to downstate load centers. OneGRID does not specifically endorse any generation resource type, but generally supports Staff's proposal to extend utilization of zero-emission nuclear generation as a bridge until additional renewable resources and transmission assets are placed in service.

Town of Scriba, Oswego, NY

The Town of Scriba submitted a letter and town resolution in support of the DPS Staff's Responsive Proposal. As a host community for three of the State's nuclear power plants, they

are concerned with the impact of the potential closure of the local nuclear facilities to the town's economy and citizens. They agree with staff's conclusions that "the result of this proposal is significant economic and environmental benefits for New York." And that "the benefits for paying for zero-emission attributes far exceed the costs."

Town of Ontario, Wayne, NY

The Town of Ontario's comments mimic the Town of Scriba's, as a host community for the Ginna nuclear power plant. They suggest that adoption of a final order resulting in the creation of a CES that values the zero-emission attributes of nuclear will provide the certainties needed to keep these facilities operating and contributing to the local economy, the state's electricity supply and the environment. They believe the Staff proposal is clear in its analysis and methodology.

Assembly Member Philip A. Palmesano, 132nd District

Assembly Member Philip A. Palmesano emphasizes in his comments the important role of nuclear generation as it allows for fuel diversity, protection against price volatility and a supply of emission free generation. He states that nuclear generation is responsible for more than 30% of NYS Power, and without the upstate nuclear plants electricity costs for consumers would increase by an average of $1.7 billion per year. Additionally, keeping the facilities open would help New York State avoid emitting 15 million to 16 million additional tons of CO2 into the environment. Finally, the facilities are responsible for the employment of 25, 000 people, and the region cannot afford the loss of these high paying jobs.

Environmental Progress

Environmental Progress comprises a group of scientists, conservationists, and environmentalists from around the world, and submits comments in support of the CES and ZEC proposal for nuclear subsides. Environmental Progress believes nuclear power must play a central role in combating climate change. They cite per-capita greenhouse gas emissions from NY power sector as one-fourth of the US average thanks to nuclear power which produced 57% of the states zero-emission generation last year.

They believe retired nuclear power would be replaced by fossil-fuel plants which would emit 15.5 million tons of extra CO2 every year, and would raise greenhouse gas emissions from the state's power sector by 50%. They suggest over-dependency on natural gas would make NY more vulnerable to fuel-supply interruptions and that the loss of nuclear would worsen grid

instability caused by the growing share of intermittent renewable power. They believe the CES ZECs place a monetary value on the benefits provided by zero-emission nuclear power, and embody a fair and equitable standard in treating nuclear on a similar footing with other low-carbon sources.

Environmental Progress believe that ZEC price caps compare favorably with other renewable energy subsidies, and that nuclear subsidies will likely be lower than ZEC caps because the subsidy is reduced when plant revenues exceed a baseline, limiting the impact on ratepayers. They then note that electricity rates (based on the initial ZEC max of $17.48/MWh) would only rise by about 1.8% for residential and 5.4% for industrial customers and that such an increase would still leave rates lower than they have been for all but two of the last ten years and would be more than compensated by the economic benefits of preserving nuclear. The closure of NY's nuclear plants would undo all the progress the state has made toward it greenhouse targets.

Retail Energy Supply Association

The Retail Energy Supply Association states that it is critical to ensure an implementation plan is carefully constructed to maintain a seamless transition for retail markets as such a plan would be the crucial nexus between the REC/ZEC approach and LSEs. They suggest that ESCOs should be incorporated into the implementation plan process and that existing contracts that LSEs currently have in place should also be accommodated. They believe ESCOs may have entered into various supply contracts which predate the order by will continue after the standard is implemented, and therefore a reasonable level of grandfathering of previous actions is crucial.

New York State Independent System Operator (NYISO)

The NYISO supports the Governor's "50 by 30" renewable goal and notes that retaining the nuclear fleet is important not only to achieve the CES, but also to maintain electric system reliability. The NYISO shares the State's concerns about the potential retirement of nuclear power stations, and urges quick implementation of a short-term program to retain these assets as a bridge until a market-based solution can be implemented. NYISO has reviewed and evaluated Staff's proposal pursuant to its market monitoring and mitigation obligations and has concluded that, based upon current market conditions, Staff's proposal does not raise wholesale market power concerns.

Alliance for a Green Economy (AGREE), Nuclear Information and Resource Service (NIRS), et al.

AGREE et al. refers to the Staff Responsive Proposal as "the largest gift of public funds to a single corporation in New York's history" p. 4. AGREE et al. object to the fact that under this plan, no other company or resource would be allowed to compete for these subsidies, even if they can offer comparative emissions reductions for lower costs and without the dangers and environmental harm caused by nuclear plants.

The group also objects to the fact that no analysis has been provided in the Responsive Proposal pursuant to the eligibility criterion of assessment of "the costs and benefits of such a subsidy for zero-emissions attributes for the facility in relation to other clean energy alternatives for the benefit of the electric system, its customers and the environment."

AGREE et al. assert that it is a "consumer rip off," to force New York's consumers to buy nuclear power at such costly rates when real clean energy options are available for lower cost, and those costs are falling. The group also asserts that the uncompetitive nature of the proposed nuclear subsidies contradicts the rest of the CES proposal, under which renewable energy providers will have to compete for either power purchase agreements or renewable energy credits (or both). It also contradicts, in the parties' opinion, the framework of REV, "under which utilities are asked to provide competitive opportunities to find the most efficient and affordable ways to avoid large consumer investments in big infrastructure and centralized power plants" (p. 6).

Additionally, the parties contend that no analysis was ever produced to show whether the State can or cannot meet the 2030 goal without some or all of the nuclear reactors that are being proposed for subsidies. They cite the Synapse study, which implies that energy efficiency could provide the same purported emissions benefit as the nuclear tier, but at far lower direct costs and net costs to consumers. AGREE et al. included an alternative approach they termed a "Responsible Proposal" in its comments.

National Energy Marketers Association

The National Energy Marketers Association (NEM) opposes the proposal on three accounts. First, they state that, like the CES White Paper, ZEC is outside of the scope of this renewable energy proceeding, and is an issue that should appropriately be dealt with at a wholesale level. They also state that support payments for nuclear generation in the form of ZECs will be made

outside of the NYISO's least cost dispatch model and will have extremely disruptive impacts on the market.

Second, NEM states that the Commission failed to provide adequate time for parties to review, evaluate and comment on the proposal. The time of two weeks is inadequate to contemplate the implementation and compliance issues for load serving entities that will be required to purchase ZECs as a part of the cost for doing business and serving customers in the State.

Third, the proposal poses risks particularly to ESCOs, as the on-going uncertainty of the size of an ESCO's customer base, along with the uncertainty of ZEC pricing may result in ESCOs not being able to recover their compliance costs. Because of this the Commission must allow ESCOs to recover these compliance costs in "regulatory change," "change in law" or other similar contractual provisions. NEM urges the Commission to adopt these recommendations.

The Entergy Entities

Entergy Entities support the responsive proposal, and that the adoption of a clean energy mechanism, inclusive of all of the State's existing nuclear facilities, is a critical needed step forward. The Entergy entities strongly support a ZEC design that focuses on the benefits inherent in carbon-free generation. Additionally, they support the public necessity determinations for the FitzPatrick, Ginna, and Nine Mile facilities, however the potential transaction of FitzPatrick to Exelon is contingent on the final terms of the CES/ZEC program and requires this proceeding to move forward quickly should the facility continue beyond January 2017.

Ampersand Hydro, LLC

Ampersand Hydro, LLC (AHL) states that the ZEC proposal is not technology neutral, inappropriately abandons competitive market principles, is needlessly bureaucratic, and represents an unconstitutional taking of private property. AHL claims that by creating different approaches based on technology or market access that procures the same attribute results in stifled innovation, rewards the least efficient producers by basing compensation on need rather than value, and requires continued oversight by multiple institutions. The company states that it would be more economically efficient to include all those that produce of zero emission attributes, not just nuclear facilities. Additionally, the process is bureaucratic as the Commission is required to determine "public necessity", which appears to mean the threat of a facility shutdown. This

provision may encourage producers to present themselves as unfavorable to get benefit.

AHL also claims that the policy may result in the unconstitutional taking of private property, as the proposals suggest deliberately paying less to resources which have no alternative market, thus taking property for public use without just compensation. AHL suggests that the ZEC framework should include all zero emitting resources, and failure to provide support that is at least equal to the level provided to nuclear generation would result in loss of zero emission generation, jobs, and contributions to small town budgets, as well as shifting the burden for the maintenance of key civil infrastructure to the state.

Upstate Energy Jobs

Upstate Energy Jobs (UEJ) strongly supports the ZEC proposal and urges the commission to adopt an implementing Order to encourage continued operation of the upstate nuclear facilities. In terms of cost benefit, the removal of the upstate plats would increase electricity demand and result in higher than average electricity carts due to the constraints in the market. Additionally, renewable energy sources are not being constructed at a pace that can replace the nuclear power that is needed now. UEJ also states that Upstate New York cannot afford to lose the facilities as they are essential to their economy.

With Oswego County ranking at the top of the State's unemployment statistics, the nuclear industry is critical to ensuring the continued economic vitality of the region. UEJ states that there must be equal support for and recognition of the undisputed truth that New York State will not accomplish clean energy goals without each of the upstate nuclear power plants. While the costs appear higher than anticipated the ultimate benefits will be invaluable to the area. UIJ urges the timely adoption of the order implementing the proposal. Additionally, the Counties of Oswego and Wayne unanimously carried out a joint resolution urging the full incorporation of the proposed ZEC and urged the Commission to move forward with the proceeding.

New York Association of Public Power

Municipal & Cooperative utilities should be exempted from obligation to purchase ZEC's from NYSERDA. Commission has long recognized the unique nature of municipals & co-op's and has exempted them from certain policies before. For instance, in 2003, they were exempted from the Renewable Portfolio Standard

because NYAPP members had already exceeded the proposed target, so additional requirements were not appropriate.

The same rational applies to the Clean Energy Standard in general and ZEC's in particular. As a group, 86% of NYAPP generation comes from renewables, namely NYPA's Niagara Project. NYAPP has demonstrated that in can meaningfully contribute to the State's clean energy goals even in the absence of mandatory requirements. Further, a mandate to purchase ZEC's may be counterproductive, inhibiting NYAPP's or NYPA's ability to develop innovative proposals to advance the State's clean energy goals.

Pace Energy and Climate Center

Pace submits comments in support of formation of a Tier 3 Zero Emissions Credit (ZEC) mechanism to support nuclear generators in New York State as part of the Clean Energy Standard, but reminds the Commission that it is also a signatory of the Clean Energy Organizations Collaborative (CEOC) which emphasizes the importance of equally strong mandates for securing energy efficiency gains and for procuring large-scale renewables. Pace emphasizes that the long term goal for New York State should be to replace the existing nuclear fleet with renewables, however, the Staff proposal will ensure that the state will reach its carbon emissions targets over the next twelve years by using nuclear generation as a key transitional component, since nuclear generation provides a carbon-free source of power.

Pace states that the subsidy level should be reassessed throughout the twelve-year term and that nuclear generation should be second in priority to efficiency and renewable energy, when the latter two are available at comparable cost. In regards to Staff's use of the Environmental Protection Agency's Social Cost of Carbon to derive the value for ZECs, Pace is encouraged, and states that the long-term goal in energy regulation should be pricing with inherent environmental and climate costs. Continuing with pricing comments, Pace urges the Commission to carefully oversee that as RGGI allowance prices increase, ZEC prices decrease, to generally ensure that Tier 3 support is not extended to unqualified facilities, and to provide a process which allows for greater public participation in oversight matters.

Nucor Steel

Continued operation of the Upstate nuclear units is desirable, but only at a reasonable cost to consumers. The Staff Responsive Proposal does not ensure reasonable cost. The

terms of the Proposal, if adopted as written, would impose massively excessive costs on NY customers, totaling approximately $7.2 Billion through 2029, which is neither just and reasonable nor in the public interest.

Constellation provided basis for its claim that it requires approximately $50/MWh to continue operations of its upstate nuclear facilities, although Nucor's own analysis finds that the "Facility Cost to Run" (ie. what Constellation needs to actually keep running the units) is less than $40/MWh. Regardless, both of these price levels are well below the assured price support that the Staff Responsive Proposal will provide. The proposal would cost NY consumers more than $130 Million more than what Constellation actually needs, based on the $50/MWh figure ($350 Million, based on the $40/MWh figure). Indeed, this is more than what constellation asked for.

Prior to the State's announcement of ZEC's, there had been no indication that either of the two Nine Mile Point units were in financial distress or warranted special price supports from ratepayers. Exelon had not claimed that either unit was facing imminent closure until after the White Paper was released. No justification has been established to provide either short or long term price supports for the Nine Mile Point units. Exelon & Constellation only demanded that a subsidy be established for all nuclear units once it became clear that "crying wolf" was required to gain the ZEC subsidy. Accordingly, the recommendation in the Staff Responsive Proposal to package a common ZEC price adder for all of the upstate units is excessive and unnecessary.

In addition, Exelon has disclosed to the investment community that through forward power sales from its existing NY units, it has largely hedged the prices that Constellation expects to actually realize at levels that are considerably higher that the near-term forward price indices. Exelon states that it expects these forward sales will produce $105 million in additional gross margin that is not captured in the Staff Responsive Proposal. And Exelon only expects pricing to improve.

According to the press release announcing Exelon's intended purchase of Entergy's FitzPatrick unit, the purchase was contingent upon Commission approval of the subsidies offered by the Staff Responsive Proposal. While continued operation of FitzPatrick may offer various benefits, NY electric rate payers should not be asked to underwrite the sale of a merchant power plant in a transaction of private parties.

The ZEC subsidy program will be following on top of other substantial inititives by the Commission, not the least of which is REV. Before the Commision unnecessarily commits ratepayers to paying billions more to Constellation than they requested a scant 10 weeks ago, the Commission ought to prepare a reasonable estimate of the combined economic costs to New Yorkers of the related and intertwined programs, policies, and mandates. The overpriced and excessively long-term commitments contained in the Staff Responsive Proposal provide compelling evidence of the desperate need to establish fundamental discipline when spending ratepayer money.

Recommendations: Reduce the ZEC subsidy to a reasonable level. Limit the ZEC subsidy only to the units that have actually demonstrated financial distress. Limit the term of the subsidies to three years (with reapplication allowed). Establish a Performance Factor adjustment to ZEC payments if units fail to maintain target production. Call on NYISO to explore market-based solutions to appropriately reflect the true system value of low/zero emission resources.

American Petroleum Institute (API)

The American Petroleum Institute believes that all greenhouse gas reduction approaches should be incentivized and that emission credits should be available to all technologies and energy sources that can reduce net GHG emissions from the electricity sector, including: nuclear, energy efficiency, natural gas, CHP, biomass, and waste heat power. They state that natural gas for electricity generation reduces CO2 emission by about half relative to the use of coal, and that natural gas is the primary reason that the US has reduced overall GHG emission more than any other nation.

Nearly 2/3 of the reduction in the power sector CO2 emissions since 2005 has come from fuel switching to natural gas. API further states that they do not believe that the Social Cost of Carbon (SCC) should be utilized in the cost-benefit analysis performed for ZECs in the proposal. They do not believe that the SCC calculation has undergone enough notice, review, and comment and should not be used in any rulemaking or policymaking process.

Multiple Intervenors (MI)

MI is very concerned about the cost impacts of the proposed CES. More specifically, MI contends that CES would result in “significant, disproportionate cost impacts on large, high-load-factor customers” (p. 1). MI is concerned that the costs of the New Staff Proposal (i.e. the Staff Responsive Proposal) have yet

to be fully evaluated, particularly since the projected costs are much higher than those projected by the Staff White Paper.

MI is concerned about the use of the Social Cost of Carbon (SCC) because the SCC estimates i. are highly controversial, ii. have been extremely volatile in the recent past, and iii. have never been shown to be accurate representations of savings that purportedly would be realized by society if the emission of one short ton of carbon is avoided. MI also contends that there is no evidence that the Nine Mile nuclear generation facility would retire absent subsidies. Even granting that this is the case, Staff disregards the economic harms that would befall customers forced to pay these subsidies. Moreover, MI states that jobs and tax revenues potentially saved should not be relied on without considering the jobs and tax revenues that potentially would be lost due to the higher cost of electricity, particularly for large, high-load-factor customers. MI then lists several reasons why the Cost Study is flawed and should not be relied upon.

MI asserts that NYPA allocations should be exempted from any obligation to pay subsidies that may be approved in the proceeding because this would be counterproductive to the State's economic development efforts and inconsistent with long-standing Commission precedent.

MI then lists numerous concerns related to the methodology section of the New Staff Proposal. Among these concerns are the following:

- MI disagrees with the notion that any projected shortfall between projected costs and projected revenues must be covered by customer-funded subsidies.
- There is no record evidence as to the "costs and benefits of such a subsidy in relation to other clean energy alternatives" (p.16).
- The New Staff Proposal fails to identify, discuss, or advance any examples of what would constitute "appropriate financial consequences for failure to produce" (p. 19).
- There is no discussion, analysis or justification proffered for the over 50% increase in the SCC values over the proposed 12-year term of the nuclear tier to the CES. In a related matter, MI disagrees with the proposal that the RGGI offset be fixed at $10.41 over the 12-year duration.
- MI believes the RGGI offset should be calculated independently from wholesale energy price forecasts.

- There are compelling arguments, on MI's view, as to why CES costs – and, in particular, nuclear-related costs – should not be allocated on a purely volumetric basis.

City of New York

Allocating ZEC purchases based on electric usage will impose costs on downstate consumers who will receive few direct benefits. Constraints on the bulk power system necessarily restrict the amount of electricity produced by Constellation's facilities that will actually be consumed by City residents. This situation cannot be rectified until new transmission lines are constructed, enabling zero-carbon power to produced upstate to be distributed downstate. The City will also not receive employment and tax benefits associated with continued operation of nuclear plants, considering their location. The cost of the ZEC's should be socialized across the State in line with how and where the benefits resulting from the ZEC's will be realized. Providing a subsidy to Constellation could be consistent with the societal benefit of zero-carbon emissions, but while it could be bounded by the carbon value, it should be limited to the actual level of need. While Constellation filed petition to pre-qualify its nuclear plants for ZEC payments, they did not state plans to retire the facilities, none of which are currently losing money. Therefore, Constellation's needs do not approach the levels of subsidies contemplated by the New Staff Proposal. Furthermore, in 1996 the Commission divested generation from utilities specifically to shield customers from the economic risks of power plants, and the ZEC proposal clearly departs from this aim.

There are several customers who have voluntarily purchase renewable source electricity above and beyond that prescribed by the Clean Energy standard, thereby accelerating renewable penetration. Presently there is an additional cost associated with this option, though current customers have presumably opted to factor that in. If these customers are forced to pay for ZEC's on top of the premium for renewables, that will reduce the amount of funds they would have otherwise spent on renewable power. This disincentive to voluntarily purchase additional renewables runs counter to the State's clean energy goals.

Proposal is devoid of any discussion of Commission's statutory authority to mandate that load-serving entities enter into contracts with NYSERDA to purchase ZEC's. City is unaware of any such authority.

Joint Utilities (Central Hudson, Con Edison, Orange & Rockland)

Central Hudson, Con Edison, and Orange & Rockland utilities

filed joint comments supporting Staff's proposal with several additional recommendations. The joint utilities state that maintaining the zero-emission electricity produced by nuclear units has an environmental policy benefit that is not currently captured by the wholesale electricity markets and support the State's efforts to develop a mechanism that appropriately values the zero-emission attributes of nuclear. First, they discuss the topic of valuing zero-emissions attributes while managing costs and risks to customers. The joint utilities agree with Staff's position that the ZEC price must be administratively set because of the limited number of market participants. They also agree with Staff's approach of setting the ZEC price based on the Social Cost of Carbon adjusted by removing the RGGI CO2 value already embedded in electricity market prices.

They also agree with Staff's approach to estimate the RGGI value using the CARIS LBMP forecasts of RGGI allowance prices, and further offer that Staff could consider whether the RGGI allowance price assumptions should follow the CARIS model to increase over time based on inflation of the escalation rate of the SCC value, instead of remaining flat. The joint utilities go on to offer several suggestions for the commission to consider in its development of the CES ZEC proposal. They suggest the Commission consider whether the blended emissions rate embedded in the current ZEC price per MWh calculation accurately reflects the CO2 emission rate per MWh of the marginal unit that would be dispatched without the nuclear unit, and also whether this emissions rate should decrease over time to reflect expected continued improvements in generation fleet emissions efficiency over time.

They also suggest the Commission consider a modest increase to the proposed cap on the volume of ZECs, in the case that nuclear generators may be able to improve their capacity factors over time and produce more emission-free electricity. The utilities believe that the proposal balances customer bill impacts with the need to reduce unintended electricity market impacts. They support Staff's recommendation to create an obligation for the owners of participating nuclear units to produce ZECs while they are being compensated for them through the ZEC program. The Joint Utilities believe that Staff's Proposal appropriately provides for all New Yorkers to contribute to attaining clean energy goals, and that customers of the utilities, ESCOs, NYPA, and LIPA will all benefit from reduced emissions and all should be allocated their share of overall program costs.

Finally the Joint Utilities agree that the proposal appropriately establishes NYSERDA as the purchaser of ZECs on behalf of the State, and that any contracts between NYSERDA and LSEs should govern the administrative aspects transferring funds to NYSERDA for the purpose of purchasing ZECs. They believe all LSEs should only be responsible for remitting their allocated costs, and no LSE should be obligated to provide any financial security or any other guarantee to NYSERSDA or to specific generators.

Constellation Energy Nuclear Group, LLC (CENG)

CENG supports preserving exiting sources of emissions-free generation via the Responsive Proposal (RP), noting the billions of dollars in annual net benefits to New Yorkers, including lower rates. CENG references the annual: $750 million social cost of carbon; $1.7 billion in direct economic benefits; $144 million in tax benefits; and the 5:1 cost-to-benefit ratio of the proposal. They also reference studies by the Brattle Group, DPS Staff, and Navigant Consulting that note the effects of losing the upstate nuclear plants: higher system costs and the inability to meet Clean Air Act requirements.

CENG supports basing ZEC pricing on the social cost of carbon and adjusting downward for increases in energy and capacity prices. They note that the social cost of carbon may underestimate the value of nuclear facilities' environmental attributes as it does not account for other air pollutants.

CENG notes that the RP, in tying subsidies to the social cost of carbon instead of a generating unit's operating costs, leaves CENG exposed to the risk of unanticipated operating costs, including a fall in wholesale prices. CENG notes the reciprocity that participating generators would have enjoyed in the CES whitepaper's ZEC pricing proposal.

CENG suggests that, since New Yorkers have seen the price of energy fall 18% in the last two years, "now is the time to invest".

CENG notes that retiring nuclear plants are typically replaced by fossil fuelled generators, referencing the RP's stated figures of increased carbon emissions and other air pollutants. They argue nuclear power remains an essential bridge to renewable technology.

CENG describes the three generalized groups in opposition to the RP: (1) nuclear energy opponents "who will never support the program because they want to see the plants closed"; (2) fossil-fueled generators that would benefit from increased energy prices in the absence of the upstate nuclear facilities;

and (3) those that argue the RP will increase costs, whose argument, CENG argues, is flawed, pointing to the positive CBA in Brattle's study.

CENG highlights the RP supporters' arguments, including:

- NYISO's support for the RP and the ability to reduce the price for ZECs in accordance with future market-based solutions and NYISO's statement that the RP does not raise wholesale market power concerns;
- Prominent climate scientists' and environmental policy experts' support of the Nuclear Tier for fighting climate change and preserving nuclear power fairly, efficiently, affordably, and economically. They note comparability to renewable energy subsidies, including NYSERDA's average subsidy of $22/MWh and the federal $23/MWh PTC.

National Grid

National Grid supports the Commission's effort to retain nuclear facilities as a means to avoid incremental CO2 emissions. They promote the idea that, consistent with "beneficiary pays" all New York electricity customers, including LIPA and NYPA, must fund Staff's proposal. National Grid believes that maintaining the State's nuclear facilities is only a short-term solution and that NY must transition to a future based on renewable energy. They believe that a "bridge" of 12 years as proposed by Staff is too long, and that such a long-term commitment will delay the needed transition. The Company proposes a six year period (first three tranches) as more appropriate. National Grid believes that mandated long-term power purchase commitments have detrimental economic effects and raise significant legal questions. The ZEC obligation is separate from any obligation on LSEs to utilize more renewable generation.

In the long term National Grid supports market mechanisms to internalize the cost of carbon emissions within wholesale electricity prices. They suggest Staff's effort should focus on market mechanisms to retain nuclear generation and to incent renewable resource development with the wholesale markets. The Company states that out-of-market payments are only necessary due to the lack of a wholesale market mechanism at present which internalizes the cost of carbon. They believe that reforming markets to properly reflect the cost and benefits society places on non-carbon emitting generation while incenting new merchant renewable resources should be the long-term preference of the Commission.

Institute for Policy Integrity, New York University School of Law

The Institute for Policy Integrity at New York University School of Law (Policy Integrity) state that while Staff's new formula, which is based on the portion of the of the Social Cost of Carbon that is uninternalized in the energy markets, is a step in the right direction, the Commission should move toward consistency in how it values its clean energy resources to avoid distorting market incentives for developing low-emitting generation. The proposal should make sure to not create an unfair advantage for nuclear energy by valuing the zero-emission attribute of nuclear energy differently than the attributes of other clean energy resources.

The Responsive Proposal does not suggest any changes to the initially proposed tradable Renewable Energy Credits for renewable energy resources, and as the REC prices will be determined by the market and will vary depending on demand and supply conditions, it is possible that they would fall below the administratively set ZEC, creating an unfair advantage. Policy Integrity states that should emission-free energy generated by renewables be compensated at a lower value, it would distort price signals, hurt economic efficiency, and hinder the goals of the CES.

Public Utility Law Project

Places disproportionate costs on low-income & fixed-income customers. It is inconceivable that adding $500 Million or more in added fees annually to energy costs in NY could be accomplished without significant impact to NY's most vulnerable populations. More attention should have been paid to the bill impacts reasonably likely to result from the subsidy program and how it would affect NY's goal of a 6% energy burden for low-income customers. This proceeding has had no analysis of such. Concerned that subsidy may undermine the newly created statewide low-income/fixed-income rate reduction program. The subsidy proposed also contradicts one of the prime motivations for the deregulation of wholesale generation: insulating ratepayers from the need to bail out energy generating entities from bad business decision of the vagaries of the market. Finally, the legal underpinnings are not sufficiently developed. Furthermore, Proposal uses the EPA's "social cost of carbon" but does not take into account the social costs of nuclear storage, radiation leaks, decommissioning, and other such attendant costs.

Potomac Economics, LTD.

(Potomac) respectfully requests the Commission to grant its motion to intervene in this proceeding and consider these comments. Potomac, as the Market Monitoring Unit for the NYISO, helps ensure that markets are created and operated in a "robust, competitive, efficient and non-discriminatory" manner. These comments discuss some of the key assumptions underlying the CES program cost estimates presented in the Cost Study.

Potomac notes that restricting market incentives by designating a preference for one technology or strategy to the exclusion of others will likely reduce CES's effectiveness and increase its costs. Based on 2015 wholesale electricity prices, Potomac finds the costs of reducing carbon emission varies substantially by technology and location (e.g., building a new combined-cycle unit on Long Island would cost $20 per ton; making payments to retaining existing nuclear capacity in western New York would cost $20 to $43 per ton; and using onshore wind and utility-scale solar PV resources on Long Island would cost $41 and $115 per ton, respectively).

Given that reducing carbon emissions can vary widely by type of action or strategy, Potomac emphasizes the value of utilizing a technology-neutral, market-based approach to pursue the most cost-effective solutions. Potomac opines that a carbon tax or a cap-and-trade carbon market (e.g., RGGI) would provide meaningful incentives for investors and other market participants to take actions to reduce carbon emissions (e.g., build cleaner new generation; retire older, high-emitting generators) and accelerate the emissions reductions and technological changes the Commission is seeking.

Potomac notes that the energy prices assumed in the Cost Study are a key assumption because they determine the required above-market payments to producers of carbon-free electricity. They also highlight that the Cost Study indicates that a 10% reduction in the assumed energy price forecast would decrease the estimated net benefits from the Tier 1 and 2 programs by 94%.

Potomac cautions that DPS Staff's use of the NYISO 2015 CARIS does not consider up-to-date assumptions regarding driving factors of energy market prices under the CES. They note that the energy price forecast is biased upwards, leading to an under-estimate of the subsidies necessary to support the CES. Since the beginning of 2016, the observed forward market prices for electricity to be delivered in 2022 are 20 - 40% ($10 - $20 / MWh) lower than assumed in the Cost Study for energy in Zone C.

Effects on Energy and Capacity Values from High-Penetration Renewable Resource Scenarios

The renewable energy targets of the proposed CES would be satisfied primarily by intermittent renewable resources. It is commonly recognized that the value of energy produced by intermittent renewable resources tends to fall as the amount of a particular type is increased in a particular area. However, the Cost Study does not consider this factor in its cost estimates, which tends to bias the estimates of the necessary subsidies downward.

The energy market value of an intermittent renewable project is dependent on the prices over the hours during which the resource is expected to produce energy. As additional capacity of a particular resource type is integrated, its production will be concentrated over a subset of the hours in a day. Consequently, the production-weighted energy prices received by the renewable resources will decline as renewable penetration increases.

Similarly, the value of capacity provided by renewable resources also decreases as an increasing amount of the same resource is added to the grid. However, the Cost Study assumes a fixed capacity value for intermittent renewable projects through the end of the plant life, and it does not consider the reduction in capacity revenues even as large quantities of wind and solar generation are added to the system. Consequently, the Cost Study likely under-estimates the subsidies that will be necessary to support resources under the CES.

The Cost Study evaluates large additions of intermittent wind and solar resources, but it does not consider any potential grid integration costs, which is contrary to the experience of other regions. The increased variability in generation may require increased amounts of fast ramping resources and ancillary services such as regulation and voltage support. Several studies and regulatory proceedings in other jurisdictions have estimated these costs (e.g., California CPUC adopted interim cost adders of $3 for each MWh from wind and $4 per MWh of solar under high renewable scenarios), which must be paid for by system users.

Potomac points out that the vast majority of the proposed utility-scale renewable projects in the NYISO’s interconnection queue are situated in upstate New York. Transmission constraints around potential renewable generation sites could require substantial investment in transmission facilities to deliver renewable energy to load centers, which the Cost Study does not include. The Cost Study would be more accurate if it

estimated these costs and included them in the calculation of Tier 1 net benefits.

Indicated Suppliers (Astoria Energy, Calpine, BP Energy, Shell Energy, et al.)

The Indicated Suppliers are not opposed to the State's efforts to reduce Carbon emissions, provided that they do not undermine the competitive electricity energy markets and they encourage reductions in carbon emissions from all fuel-type resources fairly and efficiently. However, the group is opposed to the Responsive Proposal (RP) because it violates the following fundamental principles:

- The RP will significantly harm the NYISO wholesale competitive electricity market by artificially suppressing installed capacity (ICAP) prices thereby disincentivizing development of new capacity.
- The Commission is preempted by the Federal Power Act (FPA) from approving the RP because it interferes with the FERC's exclusive jurisdiction under the FPA to set rates for the wholesale sale of energy and capacity. The proposal also conflicts with FERC's policy that the NYISO's ICAP auctions be the tool to incent the construction of new resources and maintenance of existing resources in order to satisfy the demand for electricity in New York. The RP runs headlong into the jurisdictional boundary recently established by the Supreme Court in *Hughes v. Talen Energy Marketing, LLC.*
- The RP is discriminatory because it rewards uneconomic nuclear facilities for their carbon emissions reductions benefits based on the social cost of carbon but does not similarly reward any other resources for providing the same benefits. The Commission should pursue a market-based approach that would incorporate the cost of carbon into wholesale energy prices to provide the necessary price signals to encourage resources of all fuel types to compete fairly to ensure the most efficient investments are made.

Public Citizen, Inc.

Proposed ZEC program is an inappropriate and expensive transfer of risk away from corporate shareholders and onto NY ratepayers. While it is certainly meritorious and important to consider investing ratepayer money into sustainable and reliable investments to both keep the lights on and address the very real threat of climate change, any proposal that involves removing market risk from owners of power plants must consider the historical rewards those owners enjoyed because of NYS's rate-deregulation experiment. The owners of the nuclear plants

likely enjoyed significant profits from operating these facilities. Entergy earned a 24% profit margin on its Non-Utility Nuclear division between 2001 and 2009.

In this same period, Entergy's monopoly utility division earned a profit margin of 7.6%. It is fair to conclude that Entergy's unregulated nuclear power plant division was the star attraction of Entergy's performance. Since 2010, Entergy began lumping the financial reporting on its nuclear facilities in with its fossil-fuel facilities, discontinuing any dedicated financial reporting on its nuclear operations. Meanwhile, Constellation sold half of its shares in nuclear fleet to Electricitè de France for $4.5 Billion, earning a 320% rate of return on the sale of those shares.

In March 2012, Constellation was acquired by Exelon for $8 Billion. Exelon's shareholders were fully aware of the financial risk associated with the upstate nuclear facilities, yet agreed to expend significant shareholder resources to acquire the facilities. In light of these developments, it is imperative to assess what appropriate responsibilities those shareholder shave now to help ensure reliability. It is inappropriate to ask the families of NY to shoulder 100% of the risk of keeping aging nuclear power plants operating without first examining how the corporate shareholders benefited from years of rate-deregulation.

The ZEC proposal fails to assign any risk to the shareholders of Exelon or Entergy, despite the fact that the whole point of NY's deregulation experiment was to transfer risk away from ratepayers and onto shareholders. In order to properly evaluate the ZEC proposal, Entergy, Exelon, & Constellation must make available full and unredacted balance sheet data for all three power plants individually since acquisition.

Assembly Member Amy Paulin, 88th District

The Assembly Woman notes the tight timeframe for consideration of Staff's Responsive Proposal and poses a number of questions. The questions seek responses on issues including cost and jobs. Assembly Member Paulin also asks for information regarding the impact on low income customer, whether the program will have different effects on different rate classes and geographies, and whether a separate surcharge or other cost recovery mechanism was considered. Finally, Assembly Member Paulin asks for background information on the length of the proposal (12 years), NYSERDA's administrative costs and eligibility determinations for the nuclear facilities.

Business Council of NYS

Supports affirmative steps to the continued operation of NYS existing nuclear facilities due to their significant electric reliability attribute, significant repression of the cost of capacity and fuel diversity benefits provided by the continued operation of these facilities. Hopeful that as the Commission acknowledges the value of nuclear generation, the Commission would subsequently halt all policies and positions predicated on the replacement of Indian Point. DPS should be more attentive to the cost impacts to NY businesses, and Council is gravely concerned that DPS has not paid heed to the concerns of the State's energy intensive businesses.

The Commission should consider shielding NY businesses from the cost of CES. Use of ZEC's without any understanding of the cumulative net cost to energy intensive businesses in willful ignorance of the directive to "provide energy system for all New Yorkers." Calls upon the Commission to withdraw the unsound and highly questionable CES cost study now that the Staff Responsive Proposal has been issued. The Cost study predicts the ZEC program would cost $9.68 Million, but now Staff increased those projections up to $40.21 Million. Decision to calculate the value of the ZEC's based on the disputed cost of carbon has resulted in a projected significant impact to energy consumers over the projections based on a reasonable rate of return. The CES needs to exempt businesses: Many of Commission's programs produce positive outcomes but collectively are a burden to numerous businesses throughout the State.

Supplemental Multi-party Comments (CIECP, PHASE, IPSEC, Manhattan Project for Nuclear-Free World)

Staff Responsive Proposal departs from the aspirations of REV and will undermine REV goals. (Commentators fully support REV.) Proposal inspires nothing but cynicism about this whole process. Aside from distorting the energy market to massively subsidize nuclear power, the characterization of nuclear power as "clean" and "zero-emissions" is a deceptive contortion of language. Nuclear power is a highly-polluting form of power, producing prodigious amounts of long-lived radioactive waste, heat, and greenhouse gases throughout its entire fuel cycle. Strongly oppose the distribution by NYS of public money to prop up polluting uranium mining, milling, enrichment, generation, and nuclear waste production. Nuclear vs. Fossil Fuels is a false choice. In contrast to the industry-commissioned study, voluminous literature demonstrate that nuclear power is extremely ill-suited to combating climate-change. A sampling of the literature has been submitted as evidence (see DMM to

verify). In addition, nuclear generation cannot be safely switched on and off as needed, making it extremely ill-suited to serve a distributed grid, which requires agile forms of energy generation. Finally, despite hundreds of billions of dollars in subsidies over half a century, nuclear is unable to compete in the marketplace. Staff Responsive Proposal, if adopted, would keep NYS shacked to aging industrial plants and an outmoded energy system at astronomical expense.

The E Cubed Company, LLC (E^3)

E^3 notes the highly charged nature of other parties' comments, suggesting that this might justify Commission delay and/or the preparation of briefs and oral arguments. Although E^3 offers no "substantive ideas that improve on the Commission's long standing generating unit retirement notification requirements, or the past reliability must run (RMR) decisions made or otherwise now being made," they note that FERC now has RMR requirements and changes in the planning process that may suggest postponing the long term aspects of the ZEC decision.

Binghamton Regional Sustainability Coalition - with 110 cosigners including elected officials and various organizations.

The Sustainability Coalition and cosigners oppose Staff's Responsive Proposal. They claim that the program will result in an $8 billion bailout of a private company and lament that the public has only been given 10 days to comment.

The commenters add that the dollar amount of the program is an extraordinary amount to pay for 2000 jobs and pose a list of questions that they feel need to be answered before the Commission can move forward on the proposal. The question cover topics such as bill impacts, basis of need, comparative analysis between energy efficiency and nuclear support, an accounting purported benefits, fast tracking energy efficiency and renewable energy, job retraining, community support related to tax base reduction.

Senator Latimer, 37th District and Senator Breslin, 44th District

Senators Latimer and Breslin request that approval of the ZEC program be delayed for 45 days to give everyone a better chance to evaluate its expected impacts. The Senators raise concern that the bill impacts might be different from those projected in the cost study due to market fluctuations in differing areas of the State.

Senator Patty Ritchie, 48th District with 114 cosigners including elected officials and community leaders.

The Senator and co-signers support Staff Responsive Proposal due to its positive impact on the State. The commenters raise concerns about the impacts of not approving the ZEC program including increased costs to limit greenhouse gases or increased emissions.

Clean Energy Standard
Summary of Comments Submitted in Case 16-E-0270

Alliance for a Green Economy (AGREE), Nuclear Information Resource Service (NIRS), et al.

AGREE et al. urge the Commission to dismiss Exelon/Constellation's petition or hold it in abeyance pending a final outcome in the main CES case. The parties assert that multiple other parties have also asserted that the petition is premature given the absence of a policy to subsidize nuclear power plants or a process established by the Commission for determining the cost of Zero Emissions Credits. AGREE et al. believe Staff's Responsive Proposal proves their concerns correct in that it proposes a price-setting mechanism irrespective of plant operating costs.

City of New York

Allocating ZEC purchases based on electric usage will impose costs on downstate consumers who will receive few direct benefits. Constraints on the bulk power system necessarily restrict the amount of electricity produced by Constellation's facilities that will actually be consumed by City residents. This situation cannot be rectified until new transmission lines are constructed, enabling zero-carbon power to produced upstate to be distributed downstate.

The City will also not receive employment and tax benefits associated with continued operation of nuclear plants, considering their location. The cost of the ZEC's should be socialized across the State in line with how and where the benefits resulting from the ZEC's will be realized.

Providing a subsidy to Constellation could be consistent with the societal benefit of zero-carbon emissions, but while it could be bounded by the carbon value, it should be limited to the actual level of need. While Constellation filed petition to pre-qualify its nuclear plants for ZEC payments, they did not state plans to retire the facilities, none of which are currently losing money. Therefore, Constellation's needs do not approach the levels of subsidies contemplated by the New Staff Proposal. Furthermore, in 1996 the Commission divested generation from utilities specifically to shield customers from the economic risks of power plants, and the ZEC proposal clearly departs from this aim.

There are several customers who have voluntarily purchase renewable source electricity above and beyond that prescribed by

the Clean Energy standard, thereby accelerating renewable penetration. Presently there is an additional cost associated with this option, though current customers have presumably opted to factor that in. If these customers are forced to pay for ZEC's on top of the premium for renewables, that will reduce the amount of funds they would have otherwise spent on renewable power. This disincentive to voluntarily purchase additional renewables runs counter to the State's clean energy goals. Proposal is devoid of any discussion of Commission's statutory authority to mandate that load-serving entities enter into contracts with NYSERDA to purchase ZEC's. City is unaware of any such authority.

Multiple Intervenors (MI) –

MI asserts that Constellation's Petition is premature in the absence of any Commission determinations on the primary CES-related issues involving nuclear generation facilities and "in knowledge of the fact that the very-recent New Staff Proposal, if adopted, would obviate the need for this entire proceeding" (p. 5). Constellation's Petition should only be considered, if at all, after the Commission rules on the proposed CES and the possible expedited program to subsidize selected nuclear generation facilities. As a condition precedent to any customer-funded CES subsidies, the owner of an upstate nuclear generation facility should be required to demonstrate (i) an intent to deactivate the facility absent such subsidies, and (ii) that such facility is expected to be uneconomic over the foreseeable future.

In the opinion of MI, the Commission should refrain from mandating long-term contracts to implement subsidies of selected upstate nuclear generation facilities. Moreover, any nuclear-related subsidies implemented as part of a CES should be calculated on a facility-specific basis and in a manner that minimizes costs to customers. Finally, MI asserts that the Commission should allow for the submission of supplemental comments herein if, following the resolution of CES-related issues, Constellation's projected operating costs are determined to have relevance to potential customer-funded subsidies that may be awarded to Ginna and/or Nine Mile. Parties should not be expected to address Constellation's projected operating costs in detail here given the fact that the New Staff Proposal, if adopted, would render such costs meaningless.

New York Association of Public Power

Municipal & Cooperative utilities should be exempted from obligation to purchase ZEC's from NYSERDA. Commission has long

recognized the unique nature of municipals & co-op's and has exempted them from certain policies before. For instance, in 2003, they were exempted from the Renewable Portfolio Standard because NYAPP members had already exceeded the proposed target, so additional requirements were not appropriate. The same rational applies to the Clean Energy Standard in general and ZEC's in particular. As a group, 86% of NYAPP generation comes from renewables, namely NYPA's Niagara Project. NYAPP has demonstrated that in can meaningfully contribute to the State's clean energy goals even in the absence of mandatory requirements. Further, a mandate to purchase ZEC's may be counterproductive, inhibiting NYAPP's or NYPA's ability to develop innovative proposals to advance the State's clean energy goals.

Nucor Steel

Nucor filed comments in Case 16-E-0270 mirroring the comments it submitted in 15-E-0302 which are summarized above. Is also submitted comments designated as confidential.

Public Utility Law Project

Places disproportionate costs on low-income & fixed-income customers. It is inconceivable that adding $500 Million or more in added fees annually to energy costs in NY could be accomplished without significant impact to NY's most vulnerable populations. More attention should have been paid to the bill impacts reasonably likely to result from the subsidy program and how it would affect NY's goal of a 6% energy burden for low-income customers. This proceeding has had no analysis of such. Concerned that subsidy may undermine the newly created statewide low-income/fixed-income rate reduction program. The subsidy proposed also contradicts one of the prime motivations for the deregulation of wholesale generation: insulating ratepayers from the need to bail out energy generating entities from bad business decision of the vagaries of the market. Finally, the legal underpinnings are not sufficiently developed. Furthermore, Proposal uses the EPA's "social cost of carbon" but does not take into account the social costs of nuclear storage, radiation leaks, decommissioning, and other such attendant costs.

New York Generation Attribute Tracking System (NYGATS)

Consistent with best practices and conventions used in other competitive market states with similar Load Serving Entity (LSE) obligations, compliance with the Clean Energy Standards (CES) will be facilitated by reliance on the New York Generation Attribute Tracking System (NYGATS). NYGATS has been developed by and is overseen by NYSERDA, and is now actively tracking generation from January 2016 and forward.

NYGATS will be the tracking and accounting platform for the CES and its functions will include: registering and establishing accounts for generators, LSEs and other market participants interested in trading certificates, issuance or "minting" of certificates, implementing transfers of certificates between accounts, and settlement associated with load for purposes of compliance with the individual tiers of the CES. NYGATS' transactional role will be limited to recording and effectuating transfers of certificate ownership and disposition, and reporting.

Neither the NYGATS certificates used by an LSE to demonstrate compliance with the CES, nor the energy associated with such certificates, can be used or claimed for compliance with any other mandate or goal in other states or for voluntary purchases (green power), meaning that double counting and double use is prohibited.

To comply with the CES, LSEs must acquire and retire NYGATS certificates, and will demonstrate the extent of their compliance by submitting NYGATS reports showing those certificates retired in their accounts.

In the implementation phase, further details will be specified in a plan. Each LSE will be required to register with NYGATS and open an LSE account to demonstrate CES compliance. LSEs will be required to report compliance to Staff after NYGATS reporting is available following the last trading period for the Compliance Year inclusive of an end-of-year balancing period. These reports will provide the necessary documentation for each LSE to satisfy claims of REC and ZEC retirement for compliance.

RENEWABLE ENERGY STANDARD - TIER 2

Criteria and Process for Determining Eligibility of Certain Existing Facilities (Maintenance Resources)

The following criteria and procedures will be implemented to determine the certification, selection, and funding of Maintenance Resources.

1. Threshold Eligibility Requirements

   a. Applicable only to currently operating run-of-river hydroelectric facilities of 5 MW or less; wind turbines; and direct combustion biomass facilities.

   b. Direct combustion biomass facilities must comply with the eligible fuel source requirements for Tier 1 eligible biomass facilities.

   c. The facility must have been in commercial operation prior to January 1, 2003.

   d. The facility's output must have been originally included in New York's baseline of renewable resources calculated as of January 1, 2003 when the RPS program was first adopted.

2. Criteria for Demonstration that Clean Energy Attributes are at Risk

   a. An examination of relevant portions of the books and records of the facility (including a documented after-tax cash flow forecast) and, to the extent appropriate, of the facility owner/operator and any affiliates;

   b. The basis for and reasonableness of expected operating and capital costs. This evaluation may include, among other things, a comparison to prior years' costs and a comparison to costs of like generation;

   c. The existence of any other cash sources available to the facility, such as:
      1) tax benefits,
      2) subsidies,
      3) contracts, and
      4) other sources, including restructuring financing;

   d. Whether market rules are increasing the costs of the facility and, if so, whether any steps can be taken to reduce such costs;

   e. Whether the facility's real property tax assessment is consistent with the assessments imposed in similarly situated facilities elsewhere, and if not, what action has been taken to address such assessment;

   f. Whether the facility is required to operate as part of a package of assets that is financially viable as a whole;

g. Whether the facility generates enough revenue, based on expected output, to cover its operating costs;

h. Whether the facility generates enough revenue to make necessary capital improvements;

i. Whether the facility generates enough revenue to cover its fixed costs, including:
   1) debt service,
   2) property taxes,
   3) security costs, and
   4) other costs; and

j. Whether the facility has attempted to make use of other renewables programs available to it, such as Executive Order 111 and the voluntary green market.

3. Procedures to Obtain Maintenance Resource Contracts

a. Any entity seeking Tier 2 maintenance resource eligibility for a facility must submit a request to the Deputy Director of the Office of Clean Energy (OCE Deputy Director). The request may be submitted at any time through the duration of the RES Program.

b. The request must include the entity's most recent three years' income statements, balance sheets, cash flow statements, and income tax returns related to the facility.

c. The request must also identify the type of facility; location; date of commercial operation; list of affiliates; list of contracts; and description of financing arrangements.

d. The OCE Deputy Director will review the information submitted and may request such further information or clarification as deemed necessary.

e. At such time that the OCE Deputy Director is satisfied that sufficient information has been received to at least begin the review process, the OCE Deputy Director will cause a Notice of Proposed Rulemaking concerning the request to be published in the State Register pursuant to the requirements of the State Administrative Procedure Act (SAPA).

f. After receiving all necessary information to complete the review, the OCE Deputy Director will make a recommendation to the Commission regarding the facility's eligibility for maintenance resource status, taking into consideration each facility's circumstances and the amount of the assistance required. If eligibility is recommended, the recommendation will include a proposed payment award amount at a level necessary to ensure preservation of the at-risk clean energy attributes and/or other measures that might be taken and proposed contract terms.

g. If the Commission approves a Maintenance Contract, it will certify the terms to the New York State Energy Research and Development Authority (NYSERDA) for administration and will also authorize a method of funding.

ZERO-EMISSIONS CREDITS REQUIREMENT

The Zero-Emissions Credits Requirement is a component of the Clean Energy Standard (CES) adopted by the Public Service Commission (Commission) to encourage the preservation of the environmental values or attributes of zero-emissions nuclear-powered electric generating facilities for the benefit of the electric system, its customers and the environment. The requirement takes the approach of valuing and paying for the zero-emissions attributes based on a formula that starts with the best available published estimates of the social cost of carbon (SCC) developed for the Environmental Protection Agency (EPA) in coordination with other federal agencies and prepared by the U.S. Interagency Working Group (USIWG).

The design and duration of the Zero-Emissions Credits Requirement can be modified or eliminated by the Commission if there is a national, New York Independent System Operator (NYISO), or other program instituted that pays for or internalizes the value of the zero-emissions attributes in a manner that adequately replicates the economics of the Zero-Emissions Credits Requirement program such that the Commission in its sole discretion is satisfied that the zero-emissions attributes are no longer at risk and that discontinuing the mechanism can be done in a manner that is fair to both the facility owners and the ratepayers.

DEFINITIONS:

A. The term "Load Serving Entity" means any entity that secures energy to serve the electrical energy requirements of end-use customers in New York State.

B. The term "Zero Carbon Electric Generating Facility" means an electric generating facility that uses energy released in the course of nuclear fission to generate electricity.

C. The term "Zero-Emissions Credit" or "ZEC" means credit for the zero-emissions attributes of one megawatt-hour of electricity production by an eligible Zero Carbon Electric Generating Facility which credit is purchased by NYSERDA or a Load Serving Entity to reduce carbon consumption by retail electric consumers in New York State.

METHODOLOGY AND REQUIREMENTS:

1. As a component of the Clean Energy Standard (CES), New York State shall provide for payments for zero-emissions attributes to Zero Carbon Electric Generating Facilities when there is a public necessity to encourage the preservation of their zero-emission environmental values or attributes for the benefit of the electric system, its customers and the environment.

2. Public necessity shall be determined on a plant-specific basis in the discretion of the Commission considering (a) the verifiable historic contribution the facility has made to the clean energy resource mix consumed by retail consumers in New York State regardless of the location of the facility; (b) the degree to which energy, capacity and ancillary services revenues projected to be received by the facility are at a level that is insufficient to provide adequate compensation to preserve the zero-emission environmental values or attributes historically provided by the facility; (c) the costs and benefits of such a payment for zero-emissions attributes for the facility in relation to other clean energy alternatives for the benefit of the electric system, its customers and the environment; (d) the impacts of such costs on ratepayers; and (e) the public interest. Units in single ownership located in the same NYISO Zone and that share costs at the same site will be treated as a single facility for the determination. Therefore, Nine Mile Units 1 & 2 will be treated as a single facility, and Indian Point Units 2 and 3 will be treated as a single facility.

3. An initial determination of facility-specific public necessity has been made upon inception of the program. Subsequent determinations of facility-specific public necessity may be made at every two-year interval after inception for Zero Carbon Electric Generating Facilities that were not qualified upon inception of the program.

4. The ZEC contracts will be administered in six two-year tranches, as follows:

   Tranche 1: April 1, 2017 – March 31, 2019
   Tranche 2: April 1, 2019 – March 31, 2021
   Tranche 3: April 1, 2021 – March 31, 2023
   Tranche 4: April 1, 2023 – March 31, 2025
   Tranche 5: April 1, 2025 – March 31, 2027
   Tranche 6: April 1, 2027 – March 31, 2029

5. Upon a determination of facility-specific public necessity, the owner of the facility will be offered a multi-year contract administered by the New York State Energy Research and Development Authority (NYSERDA) to purchase ZECs from the period beginning on the first day of the eligibility tranche through March 31, 2029. The facility will have an obligation to produce the ZECs and to sell them to NYSERDA through March 31, 2029, except during periods when the calculated ZEC price pursuant to the contract is $0.

6. For the three facilities for which an initial determination of facility-specific public necessity has been made upon inception of the program, the 12-year duration will be conditional upon a buyer purchasing the FitzPatrick facility and taking title prior to September 1, 2018, the date six months before the commencement of the period of Tranche 2. If the sale and closing does not occur, there will be no commitment for the program to continue beyond Tranche 1 and the Commission will have six months before the otherwise-planned commencement of Tranche 2 to determine a future course of action, if any.

7. The obligation to produce will be enforced by appropriate financial consequences for failure to produce. For the three facilities for which an initial determination of facility-specific public necessity has been made upon inception of the program, a performance mechanism will be included in the contract between NYSERDA and the plant owners. The Ginna and Nine Mile Point facilities under common ownership will be treated as a group for these purposes. The FitzPatrick facility when in separate ownership from the other facilities shall be considered a group of one for these purposes. If the FitzPatrick facility is acquired by the owner of the Ginna and Nine Mile Point facilities all three facilities will be considered together as a group for these purposes. If the facilities in a group perform in any tranche period at less than 85% of their group MWh cap and obligation for the tranche period, then the cap and obligation for the next tranche period for the group will be reduced by 1,000,000 MWh if all three facilities are in the group; 666,666 MWh if two facilities are in the group, and 333,333 MWh if only one facility is in the group. After the next tranche in which the facilities in a group perform at or above the new lower cap and obligation, the original cap and obligation will be restored for the subsequent tranche.

8. The program and especially the caps on eligible production of ZECs is designed to preserve the zero-emissions attributes of all of the qualifying facilities and NYSERDA as the contract administrator shall ensure that contracts for all of the facilities are in place before any of the contracts are allowed to become effective.

9. Should any of the three facilities initially qualified (FitzPatrick, Ginna and Nine Mile Point[1]) permanently cease producing zero-emissions attributes for any reason whatsoever the overall cap of 27,618,000 MWh will be reduced by one-third for each facility that permanently ceases producing zero-emissions attributes. Therefore, if one of the facilities ceases producing zero-emissions attributes, the overall cap will be reduced to 18,412,000 MWh; if two of the facilities cease producing zero-emissions attributes, the overall cap will be reduced to 9,206,000 MWh. These requirements will act both as an incentive to the facility owners to keep all of the plants operating, and to ensure that the continuing program keeps the original balance between ratepayer and generator interests. The reductions will be pro-rated within a tranche period to the date upon which the facility permanently ceased producing zero-emissions attributes.

10. The price to be paid for ZECs has been determined administratively by the Commission as there are too few owners of the affected generation facilities for there to be a valid competitive process to determine the prices as the owners would have too much market power for effective competition.

11. For the contract period of Tranche 1, the price of the ZEC is based upon the average April 2017 through March 2019 projected SCC as published by the USIWG in July 2015 (nominal $42.87/short ton), less a fixed baseline portion of that cost already captured in the market revenues received by the eligible facilities due to the Regional Greenhouse Gas Initiative (RGGI) program based upon the average of the April 2017 through March 2019 forecast RGGI

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[1] Nine Mile Point Units 1 & 2 qualified jointly as a single facility. If either unit permanently ceases producing zero-emissions credits, it will be treated as if the entire qualified Nine Mile Point facility has permanently ceased producing zero-emissions credits.

prices embedded in the Congestion Assessment and Resource Integration Study (CARIS) Phase 1 report (nominal $10.41/short ton). The formula yields a net cost of carbon of $32.47 (nominal $/short ton), and a ZEC price of $17.48 per MWh for the contract period of Tranche 1 [see Attachment 1 for the detailed calculations behind this price].

12. For the contract periods of Tranche 2 through Tranch 6, the ZEC prices would be calculated pursuant to a formula by tranche. In general concept, the formula is as follows:

Social Cost of Carbon − **Baseline RGGI Effect** − **Amount Zone A Forecast Energy Price and ROS Forecast Capacity Price combined exceeds $39/MWh** = **Upstate ZEC Price**

Note: the $39/MWh figure is subject to adjustment.

13. The formula components are described more specifically, as follows:

(a) The Social Cost of Carbon (SCC) component (nominal $$ per short ton of CO_2) would be as follows:

Tranche 2	$46.79	Average of April 2019 - March 2021 USIWG on SCC estimates (July 2015)
Tranche 3	$50.11	Average of April 2021 - March 2023 USIWG on SCC estimates (July 2015)
Tranche 4	$54.66	Average of April 2023 - March 2025 USIWG on SCC estimates (July 2015)
Tranche 5	$59.54	Average of April 2015 - March 2027 USIWG on SCC estimates (July 2015)
Tranche 6	$64.54	Average of April 2027 - March 2029 USIWG on SCC estimates (July 2015)

(b) The Baseline RGGI Effect component would remain fixed for all tranches at a nominal $10.41/short ton. [Note: The

energy price forecast part of the adjustment described below will capture forward-going changes due to RGGI].

(c) The Conversion Factor used to convert the net CO_2 externality cost in nominal dollars per short ton to dollars per MWh will remain fixed at 0.53846 for the first three tranches. For Tranche 4, if the total energy from renewable resources consumed in New York State during calendar year 2022 is over 50,000,000 MWh, the marginal conversion factor will be adjusted downward. The amount of the adjustment will be 0.00491 tons per MWh for each 1,000,000 MWh of renewable energy consumed above 50,000,000 MWh.[2] For Tranche 5, if the total energy from renewable resources consumed in New York State during calendar year 2024 is over 50,000,000 MWh, the marginal conversion factor will be adjusted downward. The amount of the adjustment will be 0.00491 tons per MWh for each 1,000,000 MWh of renewable energy consumed above 50,000,000 MWh. For Tranche 6, if the total energy from renewable resources consumed in New York State during calendar year 2026 is over 50,000,000 MWh, the marginal conversion factor will be adjusted downward. The amount of the adjustment will be 0.00491 tons per MWh for each 1,000,000 MWh of renewable energy consumed above 50,000,000 MWh.

(d) The Forecast Energy & Capacity Price Change Adjustment component uses changes in independently published forecasts of going-forward energy and capacity prices to adjust the ZEC price (downward only so as not to exceed the Social Cost of Carbon) by the amount that future forecasts predict that NYISO Zone A energy prices combined with the Rest of State (ROS) capacity prices will exceed $39/MWh. NYISO Zone A and ROS were chosen as relevant proxies. These components measure only the change in forecasts over time; they do not establish energy or capacity prices. The $39/MWh baseline figure approximates a recent period average of the forecasts of Intercontinental Exchange (ICE) of the NYISO Zone A energy prices projected by ICE for the period April 2017 through March 2019 combined with the per MWh equivalent of a recent period average of the forecasts of New York Mercantile Exchange (NYMEX) NYISO Rest of State

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[2] This adjustment factor is designed so that the marginal emissions rate begins to fall once 50,000,000 MWh of renewable energy is achieved, and a rate of 0.45 tons per MWh is reached when 68,000,000 MWh of renewable energy is achieved.

Capacity Calendar Month Futures projected by NYMEX for the period April 2017 through March 2018. The adjustment would be calculated as follows:

Tranche 2	Price adjustment in $$/MWh equals the sum of ICE's Calendar Year 2018 NYISO Zone A price forecasts for April 2019 through March 2021[3] and the per MWh equivalent of the average of NYMEX's July through December 2018 NYISO Rest of State capacity price forecasts for April 2019 through March 2020, less $39/MWh.	If the combined forecasted prices are $39/MWh or less, the adjustment would be zero (there would be no adjustment).
Tranche 3	Price adjustment in $$/MWh equals the sum of ICE's Calendar Year 2020 NYISO Zone A price forecasts for April 2021 through March 2023 and the per MWh equivalent of the average of NYMEX's July through December 2020 NYISO Rest of State capacity price forecasts for April 2021 through March 2022, less $39/MWh.	If the combined forecasted prices are $39/MWh or less, the adjustment would be zero (there would be no adjustment).
Tranche 4	Price adjustment in $$/MWh equals the sum of ICE's Calendar Year 2022 NYISO Zone A price forecasts for April 2023 through March 2025 and the per MWh equivalent of the average of NYMEX's July through December 2022 NYISO Rest of State capacity price forecasts for April 2023 through March 2024, less $39/MWh.	If the combined forecasted prices are $39/MWh or less, the adjustment would be zero (there would be no adjustment). Note: the $39/MWh figure is subject to adjustment.

[3] NYISO Zone A energy price forecasts for each 24-month tranche will be determined as follows: 1) for each trading day during the calendar year preceding each tranche, ICE NYISO Zone A Day-Ahead Peak Fixed Price Future (ICE code NAY) and NYISO Zone A Day-Ahead Off-Peak Fixed Price Future (ICE code AOP) settled futures prices for the 24 months of the tranche will be separately averaged, yielding separate average on-peak and off-peak tranche energy prices for each trading day; 2) each trading day's average on-peak and off-peak energy prices (developed in step 1) will be time-weight averaged based on the number of on-peak and off peak hours in the tranche, yielding an single average energy price for the tranche for each trading day; 3) the average energy prices for each of the trading days during the calendar year preceding each tranche (developed in step 2) will be averaged, yielding the NYISO Zone A energy price forecast for the tranche.

Tranche 5	Price adjustment in $$/MWh equals the sum of ICE's Calendar Year 2024 NYISO Zone A price forecasts for April 2025 through March 2027 and the per MWh equivalent of the average of NYMEX's July through December 2024 NYISO Rest of State capacity price forecasts for April 2025 through March 2026, less $39/MWh.	If the combined forecasted prices are $39/MWh or less, the adjustment would be zero (there would be no adjustment). Note: the $39/MWh figure is subject to adjustment to use the amount used for Tranche 4.
Tranche 6	Price adjustment in $$/MWh equals the sum of ICE's Calendar Year 2026 NYISO Zone A price forecasts for April 2027 through March 2029 and the per MWh equivalent of the average of NYMEX's July through December 2026 NYISO Rest of State capacity price forecasts for April 2027 through March 2028, less $39/MWh.	If the combined forecasted prices are $39/MWh or less, the adjustment would be zero (there would be no adjustment). Note: the $39/MWh figure is subject to adjustment to use the amount used for Tranche 4.

In order to capture the effects that changed congestion patterns will have on the basis differential, the $39/MWh reference price used in ZEC price formula will be updated one time, at the time the Tranche 4 ZEC price is determined. The one-time update will be calculated by determining the historic basis over the 2017-2022 time period and adjusting the $39/MWh reference price used in the ZEC price formula if the historic basis is outside of a range of $5-$7/MWh. The exact methodology is as follows:

> The historic $/MWh difference between the six-year average Zone A day-ahead energy price and the individual six-year average generator bus day-ahead energy prices for each of the four nuclear units will be calculated based on historic NYISO data for calendar years 2017 through 2022.[4]
>
> The four $/MWh price differences (basis) will be weighted to determine a single average historic $/MWh basis differential. The nuclear unit weightings will be based on the actual six-year cumulative energy output of each unit for the years 2017 through 2022. Depending on the methodology employed, the Tranche 1 forecast $/MWh basis differential between Zone A and the upstate nuclear generator busses is between $5/MWh and $7/MWh. If the average historic basis

[4] The historic NYISO data can be generated here: http://www.nyiso.com/public/markets_operations/market_data/custom_report/index.jsp?report=dam_lbmp_gen.

differential is below $5/MWh, the difference between $5/MWh and the average historic basis differential will be subtracted from the $39/MWh reference price contained in the ZEC price formula. If the average historic basis differential is above $7/MWh, the difference between the average historic basis differential and $7/MWh and will be added to the $39/MWh reference price contained in the ZEC price formula. If the average historic basis differential is between $5/MWh and $7/MWh there will be no adjustment to the $39/MWh reference price contained in the ZEC price formula.

If the basis differential decreases, consumers would benefit, all else equal, since the $39/MWh reference price is adjusted downward; if the basis differential increases, consumers would never pay more than the Social Cost of Carbon in Staff's Responsive Proposal.

14. The amount of ZECs to be purchased on an annual basis will be capped at a MWh amount that represents the verifiable historic contribution the facilities have made to the clean energy resource mix consumed by retail consumers in New York State. For the three facilities for which an initial determination of facility-specific public necessity has been made upon inception of the program, the Commission has determined that the amount of ZECs to be purchased on an annual basis will be capped at 27,618,000 MWh. The FitzPatrick plant, so long as it remains in ownership separate from the other facilities, shall have an individual cap and obligation of 25.4% of the total or 7,014,972 MWhs (based on a multi-year historic average). The Ginna and Nine Mile Point facilities under common ownership shall have a group cap and obligation of the remaining 74.6% of the total or 20,603,028 MWhs. If the FitzPatrick facility is acquired by the owner of the Ginna and Nine Mile Point facilities, the caps will be combined and treated as a single group.

15. Verification of ZEC production shall be made by NYSERDA, in consultation with the Department of Public Service, subject to ultimate Commission authority.

16. If the zero-emissions attributes of the downstate Indian Point facility become at risk and the Commission determines that there is a public necessity to encourage the preservation of their zero-emission environmental values or

attributes, the Commission reserves the right to possibly calculate the ZEC price to reflect the difference between upstate and downstate market revenues in order to put downstate facilities on an equal footing with upstate facilities. A methodology to calculate the upstate/downstate price differential may be developed if its use becomes necessary.

17. The price charged by NYSERDA per ZEC shall be at the price established administratively by the Commission as described above, plus an adder to cover NYSERDA's incremental administrative costs and fees associated with the ZEC program and ZEC revenues.

18. All Commission determinations of public necessity to pay for zero-emissions attributes for a facility are subject to the execution of an appropriate contract between NYSERDA and the owner of the facility in accordance with the Commission order establishing the Zero-Emissions Credits Requirement.

Attachment 1 - ZEC Calculations

Table 1

USIWG Annual Estimates of Social Cost of Carbon (SCC)
Adjusted for Inflation and Converted to Nominal Dollars per Short Ton

A	B	C	D	E
			B*C/100	**D*0.907184**
	US SCC "Central Value"	Inflation	US SCC "Central Value"	x 0.907184 (metric to short ton)
	($2007)/m-ton	**GDP-IPD Base 2007**	**($ Nominal) /m-ton**	**$ Nominal /short ton**
2017	$39	117.0197464	$45.64	$41.40
2018	$40	119.485483	$47.79	$43.36
2019	$41	121.9512195	$50.00	$45.36
2020	$42	124.5196951	$52.30	$47.44
2021	$42	127.1909097	$53.42	$48.46
2022	$43	129.8621242	$55.84	$50.66
2023	$44	132.5333388	$58.31	$52.90
2024	$45	135.3072924	$60.89	$55.24
2025	$46	138.183985	$63.56	$57.66
2026	$47	141.0606777	$66.30	$60.14
2027	$48	144.0229519	$69.13	$62.71
2028	$49	147.0474339	$72.05	$65.37
2029	$49	150.13543	$73.57	$66.74

Note: Some of the numbers have been rounded.

Table 2

Sample Conversion from Annual to Tranche Period and Calculation of RGGI Baseline

	US SCC "Central Value"	RGGI estimate in CARIS LBMP	Net CO2 Externality
	$ Nominal /short ton	**$ Nominal /short ton**	**$ Nominal /short ton**
2017	$41.40	$10.12	$31.28
2018	$43.36	$10.48	$32.88
2019	$45.36	$10.99	$34.37
4/1/2017-3/31/2019	**$42.87**	**$10.41**	**$32.47**
[Tranche 1# = (¾ of 2017# + 2018# + ¼ of 2019#)/2]			

Note: Some of the numbers have been rounded.

Table 3

Calculation of Net CO_2 Externality by Tranche

		US SCC "Central Value"	Baseline Avg 2017-2018 RGGI estimate in CARIS LBMP	Net CO_2 Externality
		$ Nominal /short ton	**$ Nominal /short ton**	**$ Nominal /short ton**
Tranche 1	4/1/2017-3/31/2019	$42.87	$10.41	$32.47
Tranche 2	4/1/2019-3/31/2021	$46.79	$10.41	$36.38
Tranche 3	4/1/2021-3/31/2023	$50.11	$10.41	$39.71
Tranche 4	4/1/2023-3/31/2025	$54.66	$10.41	$44.26
Tranche 5	4/1/2025-3/31/2027	$59.54	$10.41	$49.13
Tranche 6	4/1/2027-3/31/2029	$64.54	$10.41	$54.13

Note: Some of the numbers have been rounded.

Table 4

Conversion of Net CO_2 Externality to Dollars per MWh by Tranche

		Net CO2 Externality	Short Ton to MWh	Adjusted SCC
		$ Nominal /short ton	**Conversion Factor**	**$ /MWh**
Tranche 1	4/1/2017-3/31/2019	$32.47	0.53846	$17.48
Tranche 2	4/1/2019-3/31/2021	$36.38	0.53846	$19.59
Tranche 3	4/1/2021-3/31/2023	$39.71	0.53846	$21.38
Tranche 4	4/1/2023-3/31/2025	$44.26	TBD	TBD
Tranche 5	4/1/2025-3/31/2027	$49.13	TBD	TBD
Tranche 6	4/1/2027-3/31/2029	$54.13	TBD	TBD

Note: Some of the numbers have been rounded.

Table 5

Calculation of ZEC Price by Tranche

		Adjusted SCC	Zone A Reference Price	Energy & Capacity Forecast Adjustment	Upstate ZEC Price
		$ /MWh	**$ /MWh**	**$ /MWh**	**$ /MWh**
Tranche 1	4/1/2017-3/31/2019	$17.48	N/A	N/A	$17.48
Tranche 2	4/1/2019-3/31/2021	$19.59	$39.00	TBD	TBD
Tranche 3	4/1/2021-3/31/2023	$21.38	$39.00	TBD	TBD
Tranche 4	4/1/2023-3/31/2025	TBD	TBD	TBD	TBD
Tranche 5	4/1/2025-3/31/2027	TBD	Tranche 4 Amount	TBD	TBD
Tranche 6	4/1/2027-3/31/2029	TBD	Tranche 4 Amount	TBD	TBD

Note: Some of the numbers have been rounded.

IMPLEMENTATION PHASE

Given the need for momentum to implement the important initiatives adopted here, in many cases this Order establishes criteria to provide for swift implementation for one or more early years. However, recognizing that advances in technology, changes in the market and other factors will influence the goals to be achieved, the Order also leaves room to revisit certain issues and make necessary adjustments in the future. Full implementation will require various determinations going forward and typically will involve a Staff proposal followed by Commission action. Staff shall periodically publish a calendar to provide information about the subject matter, timing and process for consideration of implementation proposals. Among items that remain to be determined during this implementation phase are as follows:

- LSE Obligations:
    - Staff review of the annual targets for LSE obligations for 2018 through 2021, with recommendations to modify or confirm the targets adopted here
    - Establishment, through Staff proposal and Commission action, of the annual targets for LSE obligations from 2022 through 2030
    - Establishment of the settlement date and details of the process for demonstrating compliance following each annual compliance period
    - Establishment of details for REC transactions between NYSERDA and LSEs, conformity with NYGATS requirements, terms of banking, and ACP payment structure
- ACP:
    - Commission announcement of ACP for 2017, involving calculation of average published REC price plus 10%

  - Adoption, through Staff proposal and Commission action, of a methodology for setting ACP for years following 2017
  - Determination of the appropriate disposition of ACP payments for the benefit of customers
- REC Price:
  - Establishment of NYSERDA's REC price, including reasonable administrative functions and costs with regard to Tier 1 procurement as established by the Commission, for 2017
  - Adoption of a methodology for pricing and offering RECs for years subsequent to 2017
- NYSERDA Procurement:
  - Development of a plan to provide NYSERDA with appropriate capitalization and cash flow for NYSERDA's role in procurement of long-term contracts, including establishing an equitable mechanism for distribution utilities to provide the necessary financing and guarantees, if necessary
  - Establishment and publication by NYSERDA of a firm schedule of fixed dates for the annual and potential supplemental solicitations for the 2017 procurement
  - Development of a procurement process for the years following 2017, including a schedule, delivery requirements and evaluation criteria -- including economic development scoring -- used for awarding bids
  - Staff recommendation as to whether NYSERDA procured RECs should be tradable in the years following 2017
- Exploration by Staff, NYSERDA and other interested stakeholders within the pending reset process to develop content and definition standards that can be used to market a New York certified green electric product, i.e., a

product that customers know has a defined content of NY-based green power

- Identification by NYSERDA of appropriate mechanisms the Commission and the State may wish to consider to achieve the objective of maximizing the potential for off-shore wind
- Consideration of practical administrative mechanisms that might be employed to accommodate geothermal heat pumps as an eligible technology
- Determination of the methodology for performing of triennial reviews, including criteria for Staff’s interim divergence test
- Development of a mechanism for monitoring EV and HP penetration
- Development of a mechanism for considering a T-REC program
- Establishment of Program Reporting and Evaluation Requirements
- Staff Review of Maintenance Program requirements to determine whether changes are necessary to align support with zero-emissions facilities, including contract term, funding source, administration and REC ownership

State Environmental Quality Review Act

FINDINGS STATEMENT

August 1, 2016

Prepared in accordance with Article 8 - State Environmental Quality Review Act (SEQRA) of the Environmental Conservation Law and 6 NYCRR Part 617, the New York State Public Service Commission (Commission), as Lead Agency, makes the following findings.

Name of Action: Clean Energy Standard (Case 15-E-0302) Order Adopting a Clean Energy Standard

SEQRA Classification: Unlisted Action

Location: New York State/Statewide

Date of Final Generic Environmental Impact Statement: May 23, 2016

FGEIS available at:
http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterSeq=48235&MNO=15-E-0302

I. Purpose and Description of the Action.

In the attached order, the Commission adopts a goal that 50% of New York's electricity is to be generated by renewable sources by 2030 and in furtherance of that goal, approves the design and directs implementation of a new Clean Energy Standard (CES).

The adopted CES includes: (a) program and market structures to encourage consumer-initiated clean energy purchases or investments; (b) obligations on load serving entities to invest in new renewable generation resources to serve their retail customers; (c) a requirement for regular renewable energy credit (REC) procurement solicitations; (d) obligations on distribution utilities on behalf of all retail customers to continue to invest in the maintenance of existing at-risk small hydro generation attributes; (e) a program to maximize the value potential of new offshore wind resources; and (f) obligations on load serving entities to invest in the preservation of existing at-risk nuclear zero-emissions attributes to serve their retail customers.

The CES includes a Tier 1 designed to encourage development of new renewable generation resources by obligating every load-serving entity (LSE) to serve their retail customers by procuring new renewable resources, evidenced by the procurement of qualifying renewable energy credits (RECs). LSEs must acquire RECs in the following proportions of the total load they serve for 2017 through 2021:

Year	Percentage of LSE Total Load
2017	0.6%
2018	1.1%
2019	2.0%
2020	3.4%
2021	4.8%

As part of the CEC, the Commission adopts a triennial review process, which will include Commission adoption of larger percentages for the years 2022 through 2030.

II. Facts and Conclusions in the FSGEIS Relied Upon to Support the Decision

In developing this findings statement, the Commission has reviewed, the "Final Supplemental Generic Environmental Impact Statement, issued on May 23, 2016 (FSGEIS), as well as the, related Final Generic Environmental Impact Statement issued February 6, 2015 in Case 14-M-0101 (FGEIS). The following findings are based on the facts and conclusions set forth in the FSGEIS and the FGEIS.

A. Public Need and Benefits

Greenhouse Gases: Climatic Impacts

Greenhouse gases (GHG) such as carbon dioxide contribute to the trend of rising average global temperatures. Over the last century, the atmospheric concentrations of carbon dioxide and other heat-trapping greenhouse gases have rapidly increased.

As the concentration of greenhouse gases increases, more heat is trapped in the atmosphere, which causes an increase in temperatures. Over the last century, New York State has

experienced rising annual average temperatures. The fastest increases in State average temperatures occurred over the last four decades (i.e., since 1970), with summer temperatures rising approximately 2.4 F and winter warming exceeding 4 F. By mid-century, New York's winter temperatures are projected to rise by another 2.5º F to 4º F, and summer temperatures by 1.5º F to 3.5ºF. Because carbon dioxide and other greenhouse gases remain in the atmosphere for decades or even centuries, climate change is expected to continue even in the face of declining emissions. In response, a number of initiative and policies exist across New York State public agencies and local communities to prepare for the significant risks that climate change poses to the State's communities and infrastructure.

In general, climate change is expected to make wet regions wetter and dry regions drier. In the Northeast, rising air temperatures will intensify water cycles State, more intense water cycles leads to water impacts such as increases in localized flash and coastal flooding, increases in the in the frequency and intensity of extreme precipitation and extreme heat events, longer summer dry periods, lower summer flows in large rivers, lower groundwater tables, and higher river and in-stream water temperatures. Projections predict that sea level at The Battery in New York City may rise between 0.6 and 1.8 feet by 2050 and between 1.9 and 6.3 feet by 2100, relative to sea levels in the 2012.

Rising ocean temperatures affect coastal areas of New York State through an increase in severe coastal storms and rising sea level. These two factors can alter sensitive coastal areas, increasing risk of property damage and harm to coastal residents, decreasing the diversity of coastal species, and move saltwater further north in the Hudson River, potentially contaminating water supplies in those areas. Extreme coastal floods are currently 50 percent more likely to occur in New York City as compared to 1900, and all coastal floods are more expansive due to higher sea levels. Over 500,000 New Yorkers live within the 100-year coastal floodplain, and therefore face risks from severe storm events.

The impacts of climate changes are expected increase the vulnerability of the affected residents, especially those populations at the greatest economic and social disadvantages.

Changing climate conditions may impact the State's ecological resources. For example, water ecosystems and aquatic species may be vulnerable to changes in timing and intensity of precipitation and water temperature. Climate change in New York State will also change the composition of the State's trees and other plants. Researchers expect spruce-fir forests, alpine

tundra, and boreal plant communities to decrease in proliferation because of increased heat waves, droughts, and heavy downpours. In some areas, climate change will also increase less desirable species, including invasive plants such as kudzu that thrive in high carbon dioxide environments which benefits fast-growing plants. Other species, including hardwood trees, may benefit to the extent that droughts do not limit their growth.

Changing climate is also expected to generate both immediate direct and long-term impacts on the state's energy infrastructure. Extreme weather events, such as landslides, high winds, heavy precipitation, droughts, and wildfires, can inflict significant damage on the state's electricity generation, transmission, and distribution infrastructure. For example, Hurricane Sandy in 2012 left more than 8 million customers without power. In colder climates, warming temperatures may cause thawing of permafrost, which may lead to the displacement of pipelines, railways, and pavement that are used for the transportation of energy fuel.

Over longer timeframes, climate change is expected to decrease the efficiency of energy generation while increasing the demand for electricity, which may cause supply issues.215 For example increased storm activity, higher temperatures and variable water availability can adversely affect natural gas and oil extraction, particularly in coastal areas. Warming temperatures can also adversely affect transmission efficiency and capacity. Renewable energy generation dependent on water resources, wind patterns, or solar radiation are also susceptible to changes in climate.

Renewable Energy Tier

The 2015 New York State Energy Plan (NYSEP) sets forth the State's long-term goal to provide 50 percent of its electricity from renewable resources by 2030 as part of a larger plan to reduce economy-wide GHG emissions by 40 percent by 2030 from 1990 levels, and a 24 percent decrease in energy consumption in buildings. These SEP goals respond to the need to lower greenhouse gas emission.

The CES establishes a mandate to meet the SEP goal of 50 by 30 goal be met using renewable technologies, thereby providing additional incentives to develop both distributed energy renewable resources and grid-connected renewable energy supply. Modeling results indicate a total large-scale renewable increment of approximately 29,000,000 MWh will be need to meet the goal.

Nuclear Energy Tier

Increased natural gas availability has increased competition in the wholesale electricity market, pricing out some nuclear operators that face increasing costs. This problem is especially relevant to upstate nuclear plants.

These current market conditions have resulted in the closure, or announced closure, of upstate New York and New England nuclear facilities. The R.E. Ginna and James A. FitzPatrick nuclear plants announced plans to close in 2017 based, in part, on the inability of the wholesale electric market to value zero emission energy generation. The Nine Mile Point nuclear facility also faces these same economic pressures.

Combined, these three upstate nuclear facilities provide approximately 16 percent of the State's energy. If the upstate power plants follow-through with their intent to close in the near term, New York would need to procure more of its electricity from fossil fuel generating plants, likely natural gas plants, which would result in increases in carbon dioxide, nitrogen oxide, and other pollutants.

Overall, the loss of upstate nuclear facilities would threaten emissions reductions achieved through the State's renewable energy programs, diminish fuel diversity, increase price volatility, and harm host communities. Support for these facilities through a CES mechanism reduces these threats.

Public Benefit of the CES

The FSGEIS describes the major categories of benefits of the CES. One of the primary beneficial changes expected from implementation of the CES is a reduction in total emissions of air pollutants resulting from fuel combustion.

Other benefits include:

- **Public health benefits** due to avoided emissions of GHG and criteria air pollutants. As increased use of renewable energy sources leads to improved air quality, society benefits from reduced health impacts and increased employee productivity. For example, as air quality improves, state health care expenditures for treatment of asthma, acute bronchitis, and respiratory conditions may be reduced.
- **Climate change benefits** related to the reduction in the State's reliance on fossil fuel energy. Climate change is expected to increase air temperatures which will in turn intensify water cycles through increased evaporation and precipitation. In New York, more intense water cycles are expected to lead to increases in local flash and coastal flooding, increases in the frequency and intensity of extreme precipitation and extreme heat events, longer

summer dry periods, lower summer flows in large rivers, lower groundwater tables, and higher river and in-stream water temperatures.

- **Ecosystem services benefits** due to reduced impacts on land and water uses, as renewable sources are incorporated into New York's energy supply portfolio in lieu of investment in fossil fuel sources.
- **Fuel diversity benefits**. Measures proposed under the CES 50 by 30 goal and CES nuclear maintenance program will likely serve to maintain fuel diversity. The addition of new renewable electricity supplies will also limit the State's reliance on natural gas, thereby contributing to this objective.

B. Potential Impacts

Chapter 5 of the FSGEIS describes the expected environmental impacts of the action. The FSGEIS focuses on the seven resource categories the prevalence of which are most likely to be effected by the CES.

The Electric Industry in New York State

Average demand for electricity has been growing, but total energy usage across all sectors has declining over the approximately the past decade. Peak demand, which only represents a fraction of overall annual power consumption, is a significant system factor, as reliability standards and infrastructure development are based on projected peak demand. Peak demand is projected to continue to grow. Another consideration of New York's current electric system is the significant variation in consumption and demand between the upstate and downstate areas. Downstate load zones H-K continue to consumer over half of the State's electricity usage and peak summer demand for New York City and Long Island in 2013 and 2014 exceeding that of the rest of the state. Moreover, the State's supply is geographically misaligned between the location of the majority of the State's demand in downstate areas, as compared to the upstate location of much of New York's power supplies – including sources with low operation costs, such as hydroelectricity and nuclear generation.

Environmental Settings Considered

The potential impacts and benefits of the CES were considered in relation to various environmental resource areas. The areas consider include physical geography; land use; water resources; climate and air quality; forest resources; critical environmental areas; species diversity; scenic and visual

resources; open space; cultural and historic resources; waste management; noise and odor pollution; public health; growth and community character; transportation; and socioeconomic and environmental justice.

Alternatives Considered

The FSGEIS presented two relevant alternative scenarios including the "no action" scenario and alternative scenarios for renewable supply and a "no action alternative for nuclear power. It is likely that under a "no action" scenario, various other actions related to achieving the 50 by 30 goal would occur and progress toward the goals would occur, over time. However, such progress would be slower than with the CES. Although some expected environmental impacts would be delayed, so too would the carbon and other greenhouse gas reductions targeted in the State Energy Plan.

A range of impacts were considered, in part because the CES complements other New York State energy policies and initiatives (REV and CEF in particular) and the environmental impacts of the CES, will depend to some extent on the success of those programs in achieve objectives. A large-scale renewable (LSR) supply curve model was utilized in order to capture the interplay of different Commission and State initiatives. The approach projects the need for approximately 29,000 to 40,000 GWh of incremental LSR generation with the variance dependent on the amount of anticipated load growth – which is directly affected by the amount of energy efficiency adopted or installed over the term of the program.

The model indicates that the largest portion of incremental LSR is expected to be land-based wind (approximately 50%) with utility-scale solar providing the second largest portion of the increment. Incremental hydropower, biomass/anaerobic digesters, offshore wind, and imported renewable power would also contribute to the renewable increment.

Environmental Impacts of Approving CES

Direct and Near Term Effects

Nuclear Energy – continued operation of plants

The CES Zero Emission Credit (ZEC) program will provide a mechanism to encourage the preservation of the environmental values or attributes of zero-emission environmental values or attributes of zero-emissions nuclear-powered electric generating facilities for the benefit of the

electric system, its customers and the environment. The program takes the approach of valuing and paying for the zero-emissions attributes based on a formula that starts with published estimates of the social cost of carbon. The program will result in continued operations of the nuclear facilities which is expected to result in the impacts described below.

Impacts from nuclear generating facilities can result from a number of facility components including: cooling systems; cooling ponds and transmission lines. These impacts have been described and analyzed by the Nuclear Regulatory Commission (NRC) during its process of relicensing New York's facilities.[1] The impacts found by the NRC are incorporated into and summarized in the FSGEIS and were considered in developing and approving the ZEC program to encourage continued operation of the facilities.

Threatened and Endangered Species

Impacts to threatened and endangered species from the continued operation of the facilities are possible. Impacts are site specific based on the presence (or absence) of threatened or endangered species in the vicinity of the plant.

Five federally or State-listed species are known to exist in the vicinity of the James A. Fitzpatrick plant: the Indiana bat, bog turtle, Eastern massasauga *(Sistrurus catenatus catenatus),* bald eagle *(Haliaeetus leucocephalus),* and piping plover *(Charadrius melodus).* Ongoing plant operations are not expected to have significant negative impacts on these species. However, maintenance activities along the transmission right-of-way could have negative impacts and additional consultations between the facility operators and U.S. Fish and Wildlife Services (FWS) are required to determine whether such activities are likely to have negative impacts.

There are no aquatic species federally listed as threatened or endangered under the Endangered Species Act (ESA) in the vicinity of Ginna. Through consultation with U.S. Fish and Wildlife Service (FWS), no aquatic species (fish, mollusks, or plants) were identified in Wayne County or any counties near Wayne County.

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[1] Office of Nuclear Reactor Regulation. 2013. Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Main Report, Final Report, NUREG-1437, Volume 1, Revision 1, Supplement 14 (R.E. Ginna), Supplement 24 (Nice Mile Point), 0Supplement 31 (James A. Fitzpatrick); Office of Nuclear Material Safety and Safeguards. 2014. Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel, Final Report, NUREG-2157, Volume 1

There are two State-listed aquatic species known to occur within Wayne County. Through discussions with NYSDEC, one endangered fish was determined to be near Wayne County (NYSDEC 2003a). The pugnose shiner *(Notropis anogenus)* was reported from Sodus Bay of Lake Ontario, approximately 32 km (20 mi) west of Ginna. However, the pugnose shiner has not been reported near Ginna, nor has it ever been captured during studies conducted by RG&E (RG&E 2002a). The lake sturgeon is a threatened species within New York State and might be found near Ginna (NYSDEC 2003a). One sturgeon was netted by NYSDEC at Pultneyville, a village approximately 9.6 km (6 mi) east of Ginna. No sturgeon has ever been reported from the vicinity of Ginna. Based on this information and consultations with NY DEC and FWS, it was concluded that continued operation of the Ginna facility will not affect any federally or New York state-listed terrestrial or aquatic species.

There are no aquatic species federally listed as threatened or endangered under the Endangered Species Act (ESA) in the vicinity of Nine Mile Point. Through consultation with the U.S. Fish and Wildlife Service (FWS) (NRC 2004b; FWS 2004c), no aquatic species (fish, molluscs, or aquatic plants) were identified as potentially occurring at the site or along the associated transmission corridors.

The Indiana Bat may be found in the vicinity of Nine Mile Point, if suitable habitat is present. However, continued operations and maintenance activities will not disturb any potentially suitable habitat. The presence of Piping Plover and Bald Eagle in the vicinity of the plant is transient.

Surface Water Resources

Regardless of cooling system type, continued operations could have effects in the vicinity of intake/discharge structures including on the salinity gradients; temperature effects on sediment transport; altered thermal stratification in lakes; scouring from discharge water, eutrophication; and discharge of biocides, discharge of chemical contaminants (e.g., metals), and discharge of sanitary waste were found to be small. Cooling water and other water discharges are regulated by State Pollutant Discharge Elimination System.

Continued operation of the nuclear facilities has a small potential water use conflicts or riparian plan and animal community impacts for plants with open-cycle cooling systems.

Although moderate potential water use conflicts and effects of consumptive water on in-stream aquatic and riparian terrestrial communities that employ cooling-tower or cooling-

pond systems are sometimes associated with nuclear facilities because they are often located near smaller water bodies. The plants at issue here are located near and consumer water from Lake Ontario.

If the plants stopped operation, there would be an immediate reduction in the consumptive use of water for cooling and in the amount of heat injected into Lake Ontario.

Aquatic Ecology

Continued operations would also have impacts to aquatic ecology. For example, entrainment sampling was conducted for the Ginna nuclear facility intake waters as part of the NYSDEC State Pollutant Discharge Elimination System (SPDES) Permit. Over a six-year study, an estimated annual average of 89 million fish eggs (predominantly alewives, (*Alosa pseudoharengus*), smelt (*Osmerus mordax*), and darters (*Etheostoma spp.)*), and 17 million fish larvae were entrained (predominantly alewives). Impingement of fish and shellfish is annually monitored at the Ginna facility since 1973 (also as part of the SPDES permit). Based on these annual data collections, Ginna operations have impinged an estimated 0.001 percent of the alewife population and 0.0009 percent of the smelt population in Lake Ontario between 1983 and 2001. Evaluation of entrainment of the ichthyoplankton community also occurs regularly through the SPDES permitting process (permits are renewed every five years). Impingement of fish and shellfish monitored is annually. Similar impacts are expected at Nine Mile and Fitzpatrick.

In addition to impingement, impacts to aquatic ecology from continued operation of the plants include cold shock; thermal plume barriers to migrating fish; premature emergence of aquatic insects; stimulation of nuisance organisms; losses from predation, parasitism, and disease among organisms exposed to sublethal stresses; gas supersaturation; low dissolved oxygen in the discharge; and accumulation of contaminants in sediments or biota. Entrainment of fish and shellfish, impingement of fish and shellfish, thermal discharge effects are also expected at all plants with the impacts being greater at once-through cooling than plants that operate a cooling tower (Nine Mile 2).

Groundwater use and Qualitiy

Groundwater use and quality impacts would be negligible since all NYS nuclear plants rely on either large lakes or rivers for the cooling intake waters. NRC regulations require nuclear power plants to monitor and identify unintended releases of radioactive substances, (e.g., tritium, a mildly radioactive type of hydrogen) into the environment and

groundwater. Based on a review of these incidents, NRC ensures nuclear plant operators take appropriate action. To-date no cases of groundwater contamination have exceeded the NRC's dose limits.

Air Quality

Adverse air quality impacts associated with operational transmission lines would also be small.

Terrestrial Ecology

Continued operations would have small potential impacts of cooling tower drift on crops, ornamental vegetation and native plants. Cooling tower and electric transmission infrastructure could result in bird mortality due to impacts. Cooling ponds create small impacts by excluding wildlife. Transmission line maintenance can cause small impacts to terrestrial ecology within and along rights-of-way. Electromagnetic field impacts on terrestrial ecology are expected to be small.

Land Use

Continued operation of the nuclear facilities is expected to have small impacts on land use cooling tower drift on crops and ornamental vegetation.

Human Health

Continued operation of the nuclear facilities could impact human health through small increases in exposure to radiation. The radiation dose commitment to the total worker population is projected to increase less than 5 percent at nuclear power plants under the typical scenario and less than 8 percent at any plant under the conservative scenario. Existing mitigation measures (ALARA process) are effective in reducing radiation doses. Public exposure to radiation is small at all sites, estimated annual cancer risk to the individual is less than 1 x 10-6. Current mitigation practices are effective at reducing public radiation doses. All other negative impacts to human health are expected to be small.

Noise

Principal noise sources at power plants do not considerably change due to continued operations; therefore, the impacts of continued operations on noise would also be small.

Socioeconomic

Socioeconomic impacts to education, public safety, social services, recreation and tourism, housing, transportation,

public utilities, and aesthetics from continued operations would also be small.

Nuclear fuel, production of nuclear waste and transport of fuel and waste to and from the facilities

Sustained operations at the nuclear facilities under the CES will continue the use of nuclear fuel, production of nuclear waste, and the transport of fuel and waste to and from the facilities. The level of these impacts are expected to be within the same range of impacts analyzed by the NRC when the plants were relicensed. Specific impacts related to the uranium fuel cycle are listed in Table 1 below.

Additionally, the Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel, Final Report analyzes the impacts of continued storage of spent nuclear fuel at reactor and away-from- reactor sites over three possible timeframes (60 years, 160 years, and indefinitely). Because New York State nuclear facilities are currently in operation and have already produced spent nuclear fuel, the impacts determined through the Continued Storage of Spent Nuclear Fuel GEIS are applicable under the action and no-action alternative.

The Continued Storage of Spent Nuclear Fuel GEIS considers impacts under normal operating conditions as well as environmental impacts of postulated accidents including severe accidents and potential acts of sabotage or terrorism. The environmental impacts of sustained operations of New York State nuclear facilities would not exceed those anticipated in the Continued Storage of Spent Nuclear Fuel GEIS. Thus, continued operations would result in no additional significant impact to the environment than those previously considered in other EIS’s. Continued operations would not entail any change in storage location or practices or change in the ultimate disposition of the spent fuel.

TABLE 1 URANIUM FUEL-CYCLE ENVIRONMENTAL DATA[A],[2],[3] (TAKEN FROM 10 CFR 51.51F)

ENVIRONMENTAL CONSIDERATIONS	TOTAL	MAXIMUM EFFECT PER ANNUAL FUEL REQUIREMENT OR REFERENCE REACTOR YEAR OF MODEL 1,000 MWE LIGHT WATER REACTOR
Natural resource use		
Land (acres)		
Temporarily committed, acres[b]	100	
Undisturbed area	79	
Disturbed area	22	Equivalent to a 110-MWe coal-fired power plant.
Permanently committed, acres	13	
Overburden moved, millions of MT	2.8	Equivalent to a 95-MWe coal-fired power plant.
Water (millions of gallons)		
Discharged to air	160	Equal to 2 percent of model 1,000 MWe light water reactor with cooling tower.
Discharged to water bodies	11,090	
Discharged to ground	127	
Total	11,377	Less than 4 percent of model 1,000 MWe light water reactor with once-through cooling.
Fossil fuel		
Electrical energy, thousands of MWh	323	Less than 5 percent of model 1,000-MWe LWR output.
Equivalent coal, thousands of MT	118	Equivalent to the consumption of a 45-MWe coal-fired power plant.
Natural gas, millions of scf	135	Less than 0.4 percent of model 1,000 MWe energy output.
Effluents-chemical (MT)		
Gases (including entrainment)[c]		
SOx	4,400	
NOx[4]	1,190	Equivalent to emissions from 45-MWe coal-fired plant for a year.
Hydrocarbons	14	
CO	29.6	
Particulates	1,154	
Other gases		
F	0.67	Principally from UF6 production, enrichment, and reprocessing. Concentration within range of state standards--below level that has effects on human health.
HCl	0.014	
Liquids		

[2] Normalized to model light-water reactor annual fuel requirement (WASH-1248) or reference reactor year (NUREG-0116).

[3] U.S. NRC. Generic Environmental Impacts Statement for License Renewal of Nuclear Plants: Main Report (NUREG-1437, Volume 1) Table S.3 Uranium fuel-cycle environmental data.

ENVIRONMENTAL CONSIDERATIONS	TOTAL	MAXIMUM EFFECT PER ANNUAL FUEL REQUIREMENT OR REFERENCE REACTOR YEAR OF MODEL 1,000 MWE LIGHT WATER REACTOR
SO^{-}_{4}	9.9	From enrichment, fuel fabrication, and reprocessing steps. Components that constitute a potential for adverse environmental effect are present in dilute concentrations and receive additional dilution by receiving bodies of water to levels below permissible standards. The constituents that require dilution and the flow of dilution water are NH2—600 ft3/sec, NOx—20 ft3/sec, Fluoride—70 ft3/sec.
NO	25.8	
Fluoride	12.9	
Ca	5.4	
C1	8.5	
Na	12.1	
NH	10	
Fe	0.4	
Tailings solutions (thousands of MT)	240	From mills only—no significant effluents to environment.
Solids	91,000	Principally from mills—no significant effluents to environment.
Effluents Radiological (curies)		
Gases (including entrainment)		
Rn-222	—	Presently under reconsideration by the NRC
Ra-226	0.02	
Th-230	0.02	
Uranium	0.034	
Tritium (thousands)	18.1	
C-14	24	
Kr-85 (thousands)	400	
Ru-106	0.14	
I-129	1.3	Principally from fuel reprocessing plants.
I-131	0.83	
Tc-99	—	Presently under consideration by the Commission.
Fission products and transuranics	0.203	
Liquids		
Uranium and daughters	2.1	Principally from milling—included tailings liquor and returned to ground—no effluents; therefore, no effect on environment.
Ra-226	0.0034	From UF6 production.
Th-230	0.0015	
Th-234	0.01	From fuel fabrication plants—concentration 10% of 10 CFR 20 for total processing 26 annual fuel requirements for model LWR.
Fission and activation products	5.9 x 10-a	
Solids (buried on site)		
Other than high level (shallow)	11,300	9100 Ci comes from low-level reactor wastes and 1500 Ci comes from reactor decontamination and decommissioning— buried at land burial facilities. 600 Ci comes from mills—included in tailings returned to ground. Approximately 60 Ci comes from conversion and spent-fuel storage. No significant effluent to the environment.
TRU and HLW (deep)	1.1 x 106	Buried at federal repository.

ENVIRONMENTAL CONSIDERATIONS	TOTAL	MAXIMUM EFFECT PER ANNUAL FUEL REQUIREMENT OR REFERENCE REACTOR YEAR OF MODEL 1,000 MWE LIGHT WATER REACTOR
Effluents—Thermal, (billions of Btu)	4,063	Less than 5 percent of model 1000-MWe LWR.
Transportation, (person-rem)		
Exposure of workers and general public	2.5	
Occupational exposure	22.6	From reprocessing and waste management.

[a] In some cases where no entry appears, it is clear from the background documents that the matter was addressed and that, in effect, the table should be read as if a specific zero entry had been made. However, there are other areas that are not addressed in the table. Table S-3 does not include health effects from the effluents described in the table, estimates of releases of radon-222 from the uranium fuel cycle, or estimates of technetium-99 released from waste management or reprocessing activities. These issues may be the subject of litigation in the individual licensing proceedings. Data supporting this table are given in the *Environmental Survey of the Uranium Fuel Cycle*, WASH-1248, April 1974; the *Environmental Survey of the Reprocessing and Waste Management Portion of the LWR Fuel Cycle*,' NUREG-0116 (Supp. 1 to WASH-1248); the *Public Comments and Task Force Responses Regarding the Environmental Survey of the Reprocessing and Waste Management Portions of the LWR Fuel Cycle*, NUREG-0216 (Supp. 2 to WASH-1248); and in the record of the final rulemaking pertaining to *Uranium Fuel Cycle Impacts from Spent Fuel Reprocessing and Radioactive Waste Management*, Docket RM-50-3. The contributions from reprocessing, waste management, and transportation of wastes are maximized for either of the two fuel cycles (uranium only and no recycle). The contribution from transportation excludes transportation of cold fuel to a reactor and of irradiated fuel and radioactive wastes from a reactor, which are considered in Table S-4 of Section 51.20(g). The contributions from the other steps of the fuel cycle are given in columns A□E of Table S-3A of WASH-1248.

[b] The contributions to temporarily committed land from reprocessing are not prorated over 30 years, because the complete temporary impact accrues regardless of whether the plant services 1 reactor for 1 year or 57 reactors for 30 years.

[c] Estimated effluents based upon combustion of equivalent coal for power generation.

[4] 1.2% from natural gas use and process.

Continued operation of the nuclear facilities will also require additional transportation of nuclear fuel and and waste to and from the facilities. Specific impacts related to transporting fuel and waste to and from the facilities in contained in Table 2 below.

TABLE 2 THE ENVIRONMENTAL IMPACT OF TRANSPORTING OF FUEL AND WASTE TO AND FROM ONE LIGHT-WATER-COOLED NUCLEAR POWER REACTOR, NORMAL CONDITIONS OF TRANSPORT

CONSIDERATIONS		ENVIRONMENTAL IMPACT	
Heat (per irradiated fuel cask in transit)		250,000 Btu/hr	
Weight (governed by Federal or State restrictions)		73,000 lb per truck; 100 tons per cask per rail car	
Traffic density –Truck		Less than 1 per day	
Traffic density – Rail		Less than 3 per month	
EXPOSED POPULATION	ESTIMATED NUMBER OF PERSONS EXPOSED	RANGE OF DOSES TO EXPOSED INDIVIDUALS (PER REACTOR YEAR)	CUMULATIVE DOSE TO EXPOSED POPULATION (PER REACTOR YEAR)
Transportation workers	200	0.01 to 300 millirem	4 person-rem
General public-Onlookers	1,100	0.003 to 1.3 millirem	3 person-rem
General public- along route	600,000	0.0001 to 0.06 millirem	
ACCIDENTS IN TRANSPORT CONSIDERATIONS		ACCIDENTS IN TRANSPORT ENVIRONMENTAL RISK	
Radiological effects		Small	
Common (nonradiological) causes		1 fatal injury in 100 reactor years, 1 nonfatal injury in 10 reactor years, $475 property damage per reactor year	

No Action Alternative

No action alternatives to the ZEC program include affects arising from nuclear reactor decommissioning; termination of plant operations and cessation of electric power production; and failure to meet need of delivered baseload power to meet electric system needs.

Decommissioning would create a need for replacement power that is likely to be met primarily by fossil fuel fired generation plants. Increased use of fossil fuels for electric generation would adversely impact air emissions through increased production nitrogen dioxide, sulfur dioxide, and carbon dioxide.

Solar Energy

Among the State's installed capacity is the Long Island Solar Farm, one of the largest utility scale solar energy

(USSE) installations at a federal facility. Installed on Brookhaven National Laboratory, the Long Island Solar Farm is currently under contract to provide 32 MW of solar-PV energy to the Long Island Power Authority (LIPA). Another noteworthy LIPA USSE contract is the Eastern Long Island Solar Project, which provides for up to 17 MW of solar carport facilities on various sites owned by Suffolk County.

The contribution of utility-scale solar energy (USSE) is projected to be in the range of 3,271 and 8,110 MW with the 70% to 84% of the development occurring in the West, Central and Capital regions of the State. (See Table 3). Impacts from these levels of USSE occur primarily from the land use requirements of such systems and the potential for destruction or fragmentation of habitat; disruption of ecosystems; interrupting normal behavior or otherwise harming animals; and creation of barriers to species movement.

TABLE 3ESTIMATED USSE PROJECTED TO DEVELOP UNDER THE CES (2019-2030)

	ESTIMATED NEW CAPACITY (MW)						ESTIMATED NEW GENERATION (GWH)					
	BASE CASE			HIGH LOAD			BASE CASE			HIGH LOAD		
NYISO ZONE	PPA	BLEND	FIXED REC	PPA	BLEND	FIXED REC	PPA	BLEND	FIXED REC	PPA	BLEND	FIXED REC
Utility Scale Solar Energy												
Zone A, West	212	841	1,471	1,464	1,454	1,444	244	966	1,688	1,681	1,670	1,658
Zone B, Genesee	0	0	0	0	97	194	0	0	0	0	112	224
Zone C, Central	0	391	782	782	1,441	2,099	0	465	930	929	1,712	2,495
Zone D, North	0	0	0	0	40	80	0	0	0	0	49	98
Zone E, Mohawk Valley	0	0	0	0	42	85	0	0	0	0	45	90
Zone F, Capital	1,711	1,812	1,912	1,936	1,942	1,949	2,083	2,206	2,328	2,356	2,364	2,372
Zone G, Hudson Valley	431	431	431	630	629	627	480	480	480	701	700	698
Zone H, Millwood	7	7	7	7	7	7	8	8	8	8	8	8
Zone I, Dunwoodie	0	0	0	0	0	0	0	0	0	0	0	0
Zone J, NYC	0	0	0	0	0	0	0	0	0	0	0	0
Zone K, Long Island	374	373	371	381	380	379	459	457	455	467	467	466
Total	2,736	3,855	4,974	5,200	6,032	6,865	3,274	4,582	5,889	6,144	7,127	8,110
Note: Estimates may not sum to the totals reported due to rounding.												

Overview Environmental Impact

Key environmental impacts due to utility scale solar energy (USSE) stem primarily from the relatively large land use requirements of such systems and the potential for such systems to destroy and fragment habitat, disrupt ecosystem processes, harm animals, interrupt natural animal behaviors (e.g., foraging, hunting, migration patterns, etc.) and introduce barriers to the movement of species.

USSE environmental impacts are typically greatest at the beginning of a project during construction of the facility and associated infrastructure (e.g., transmission corridors, substations, and roads). Environmental impacts during construction will vary depending on the land cover and topography of the selected site and its proximity to habitat relied upon by sensitive plant and/or animal species. To the extent that USSE are sited outside of, and at distances sufficient to reduce interaction with sensitive species, the environmental impacts of such systems can be minimized.

Construction and operation may also impact local air quality for plant employees and the surrounding community. For example, increased vehicle use associated with site construction and operation can elevate local levels of CO, NOx emissions and airborne dust ($PM_{2.5}$ and PM_{10} emissions). While solar PV cells emit no criteria pollutants and require little maintenance during operations, chemicals such as dust suppressants, rust inhibitors, antifreeze and herbicides will be used to some extent throughout a plant's lifespan to ensure proper operation and maintenance of USSE infrastructure.

Soil disturbance during site preparation (e.g., vegetation clearing and surface grading) can also further interfere with natural ecosystems by introducing exotic species, which can compete with, and in some cases extirpate, native species. Solar PV systems have low rates of water consumption, required only for panel washing and dust suppression, estimated at a rate of 0.02 m^3/MWh. The Long Island Solar Farm estimated annual water usage for panel washing of approximately 500,000 gallons, equivalent to a per MWh rate of approximately 0.04 m^3/MWh. Past studies of USSE in arid lands of the southwestern U.S. have identified dust suppression as a significant source of water use, although the New York humid continental climate is far less susceptible to generating the type of dust issues faced by USSE constructed in the much drier climate in southwestern US.

Connecting USSE to the existing electricity system can also result in both short- and long-term adverse environmental

impacts. Similar to site construction, development of transmission lines can destroy and fragment habitat, displace and disrupt local wildlife, introduce invasive species and serve as barriers to the movement of species and their genes. And similar to site construction, the scope and magnitude of such impacts is substantially dependent on such factors as corridor location, distance to existing electricity infrastructure and corridor placement. In the case of the Long Island Solar Farm, approximately 900 feet of transmission cables were required to connect the PV solar arrays to the LIPA substation.

During the decommissioning phase, PV cells can be recycled to minimize the potentially adverse environmental impacts of the PV cell materials. Proper dismantling, handling, and disposal of PV cells and associated plant materials will minimize the potential environmental impacts that can result from exposure to toxic materials such as cadmium, selenium and arsenic dust, which are contained within PV cells.

Land Use Requirements

NYSERDA's 2014 resource potential study also considered the land use requirement for the installation of solar energy. The level of solar radiation is relatively consistent across the state, with slightly lower solar intensity in some parts of upstate, and a slightly higher solar intensity in Long Island. Overall, the 2014 study concluded that more than 187 million GWh of solar energy fall on New York each year, more than 1,200 times larger than New York's electric use.[4]

NYSERDA's 2014 potential study estimates that solar energy in New York requires approximately one square kilometer of land for every 155 GWh of electricity production, equivalent to approximately two acres per MW capacity, and 1.6 per GWh of annual production. Assuming installation of between 2,736 and 6,865 MW of USSE and a land use requirement ratio of two acres per MW capacity from NYSERDA's 2014 potential study, between 5,472 and 13,730 acres would be dedicated to USSE, a land area equal to approximately 0.02 percent to 0.04 percent of the State's total land area of approximately 35 million acres. As of 2016, New York had 224 state-certified agricultural districts containing 8.79 million acres and including approximately 24,130 farms, equating to approximately 26 percent of the State's total

[4] NYSERDA. Energy Efficiency and Renewable Energy Potential Study of New York State. Volume 3. Prepared by Optimal Energy, Inc. April. Accessed February 1, 2016 at: http://www.nyserda.ny.gov/About/Publications/EA-Reports-and-Studies/EERE-Potential-Studies.

land area. If 100 percent of USSE projects were to be installed on New York agricultural lands, approximately 0.06 percent to 0.16 percent of agriculture lands would be converted to USSE.

Visual Resources

USSE may raise community concerns regarding visual impacts. As most USSE are located in relatively flat areas and/or valleys, USSE operations can often be seen from long distances. PV panels can further increase visibility by creating glare that can cause visual discomfort and temporary after images even at long distances. Argonne National Laboratory's Environmental Science Division, with support from the U.S. Department of the Interior's National Park Service and Bureau of Land Management, examined the visual characteristics of various PV, power tower, and parabolic trough facilities located in Nevada, California, and Spain. Based on field observations, PV and parabolic trough facilities were easily visible at long distances during both daytime and nighttime observations. Other visual effects observed included dramatic and rapid changes in color and/or reflectively of the solar PV cells. The study authors concluded that the industrial nature of USSE sites can offer strong contrasts to the relatively rural landscapes that USSE often inhabit.

Additional visual impacts can accrue from the infrastructure surrounding a developed solar array, including buildings, parking and other work areas. To the extent that periodic maintenance activities such as panel washing occur at night, such activities can increase light pollution such as skyglow, light trespass, and glare.

Best practices during installation can minimize visual impacts, including proper siting and site operations, screening with fencing, berms, or vegetation, using non-reflective support structures, avoiding removal of vegetation near modules when possible, prohibiting commercial messages and symbols on modules, and identifying ways to preserve the historic character of potential sites, particularly for historic buildings.

Land Based Wind

Wind currently accounts for a relatively small proportion of the New York State’s overall energy portfolio. However, development of wind is a renewable energy resource rapidly expanding. AWEA currently ranks New York 12th in the nation for installed wind power capacity.

Between 2007 and 2015 installed nameplate capacity of wind plants in New York nearly tripled, from 425 MW in 2007 to 1,746 MW in 2015. Table 4 summarizes the state’s operating and planned wind capacity across five size classes. Summer 2015

generating capacity from wind plants totaled 1,461 MW across 21 projects. In addition, as of December 31, 2015, there were 28 projects totaling 3,459 MW of wind generation capacity proposed in NYISO's interconnection queue.

TABLE 4 OPERATING AND PROPOSED WIND CAPACITY IN NEW YORK STATE (MW)

CAPACITY	2015 CAPACITY(1)	PROPOSED CAPACITY(2)
>10 MW	0 MW (5 projects) (3)	0 MW (0 projects)
10-29 MW	32 MW (2 projects)	60 MW (4 projects)
30- 99 MW	527 MW (7 projects)	639 MW (9 projects)
100-199 MW	671 MW (6 projects)	969 MW (8 projects)
200 MW and over	231 MW (1 project)	1,790 MW (7 projects)
Total	**1,461 MW (21 projects)**	**3,459 MW (28 projects)**

Sources:
(1) Summer capacity data, reflecting dependable maximum net generating capacity values that are applicable to the Summer 2015 ICAP Market. NYISO. 2015 Load & Capacity Data "Gold Book." April 2015; and NYISO's "2015 NYCA Generating Facilities.xlxs" accessed on February 1, 2016 at: http://www.nyiso.com/public/markets_operations/services/planning/documents/index.jsp.
(2) Summer capacity data from: NYISO Interconnection Queue. December 31, 2015.
(3) The NYISO Interconnection Queue, December 31, 2015 includes five projects for which summer capacity values were shown as zero.

TABLE 5 CURRENT INSTALLED AND PROPOSED WIND CAPACITY BY COUNTY

COUNTY	2015 CAPACITY (MW)[1]	PROPOSED CAPACITY (MW) [2]
Steuben, NY	180.4	590.7
Jefferson, NY		494.8
Clinton	279.0	449.0
Chautauqua		324.0
Niagara, NY		201.3
Franklin-Clinton, NY		200.0
Lewis, NY	321.8	157.9
Cattaraugus		148.5
Rensselaer, NY		120.0
Oswego, NY		105.6
Steuben-Allegany, NY		103.3
St. Lawrence, NY		100.0
Cortland		90.0
Madison, NY	46.1	82.6
Genesee, NY		79.8
Franklin	106.5	77.7
Delaware		68.4
Herkimer, NY	74.0	33.0
Otsego, NY		19.8
Tompkins, NY		12.5
Erie	20.0	
Wyoming	432.9	
Grand Total	**1,460.7**	**3,458.9**

Sources:
(1) Summer capacity data from: NYISO. 2015 Load & Capacity Data "Gold Book." April 2015; and NYISO's "2015 NYCA Generating Facilities.xlxs" accessed on February 1, 2016 at: http://www.nyiso.com/public/markets_operations/services/planning/documents/index.jsp.
(2) Summer capacity data from: NYISO Interconnection Queue. December 31, 2015.

The proposed CES would stimulate further development of the State's land-based wind resource. Incremental land-based wind capacity could provide between 4,000 MW and 5,905 MW and between 13,651 GWh and 19,802 GWh of generation under the base case and high load case scenarios, respectively. As shown in Table 5, the majority of this capacity is anticipated to be developed through wind projects between 30 and 99 MW in size.

TABLE 6 ESTIMATED UTILITY SCALE LAND-BASED WIND ENERGY PROJECTED TO DEVELOP UNDER THE CES (2019-2030)

	ESTIMATED NEW CAPACITY (MW)						ESTIMATED NEW GENERATION (GWH)					
	BASE CASE			HIGH LOAD			Base Case			High Load		
CAPACITY	PPA	BLEND	FIXED REC	PPA	BLEND	FIXED REC	PPA	BLEND	FIXED REC	PPA	BLEND	FIXED REC
Land-Based Wind												
10-29 MW	730	661	592	970	848	726	2,665	2,442	2,219	3,470	3,073	2,676
30-99 MW	1,950	2,212	2,475	3,323	3,285	3,248	6,638	7,564	8,489	11,138	11,038	10,938
100-199 MW	1,014	1,008	1,001	1,311	1,303	1,294	3,336	3,306	3,276	4,217	4,188	4,159
200 MW or over	306	307	307	302	302	302	1,012	1,014	1,017	977	977	977
Total	4,000	4,188	4,375	5,905	5,738	5,570	13,651	14,326	15,002	19,802	19,276	18,749
Note: Estimates may not sum to the totals reported due to rounding.												

Environmental Impact Overview

Environmental impacts arise due to the land disturbance during the construction and operation of wind turbines and associated equipment, and due to the structure and movement of turbines themselves. The primary impacts of wind turbines relate to the high land use requirement, possible collisions of wildlife with turbines, and habitat fragmentation due to construction of arrays. However, the impacts on wildlife across all life stages of a wind turbine are still likely to be significantly less than impacts of traditional fossil fuel energy.

Land Use Impacts

Utility-scale land-based wind projects are relatively land-intensive, consisting of an array of turbines that require a minimum amount of spacing between turbines to maximize effectiveness. The NREL conducted a nationwide survey in 2009 of the land use associated with large (defined as facilities with a nameplate capacity of greater than 20 MW) land-based wind facilities. Based on data collected for over 172 existing or proposed wind projects between 2000 and 2008, representing over 26 GW of capacity, the NREL estimated an average land use between 30 and 141 acres per MW of wind capacity, although only a small portion of that land is permanently disturbed (roughly 0.5 to 2 percent). Approximately 80 percent of this permanent disturbance on average is associated with roads, with the

remaining attributable to turbine area and associated equipment.

These estimates are in line with a 2009 wind energy toolkit published by NYSERDA which cites land requirements between 30 to 80 acres per MW for utility-scale projects in open, flat terrain and 20 to 40 acres per MW for utility-scale wind projects located on ridgelines in more hilly terrain.

The 2009 NREL study also examined the extent to which land use intensities for large wind projects varied with land cover. While temporary direct impacts were the highest among wind facilities located in forested areas, likely due to the need to clear forest to create access roads, turbine pads and setback areas, wind facilities in forested areas also reported the lowest total area impacted. Notably, wind projects sited on row crops had the greatest total area requirement followed by grasslands.

Species Biodiversity

Birds and bats are particularly vulnerable to injury and mortality from collision with land-based wind energy projects. Wind turbines used in commercial operations typically consist of an array (or multiple arrays) of turbines with rated capacities ranging from 660 kW to 3.6 MW for each unit. Turbines blades range in size depending on the turbine capacity; the most common size is 150 feet, roughly equal to half the length of a football field. In contrast, wind turbines for residential or small-scale projects are much smaller, with blade lengths a third of the size of commercial-sized turbine (approximately 50 feet).

In 2014, the National Wind Coordinating Committee (NWCC) examined 18 post-construction bird and bat surveys at 11 different projects in New York and found a range of bird mortality from 0.66 to 9.59 birds per turbine during a survey period that extended from mid-April to mid-November. These estimates are consistent with a 2010 NYSERDA survey which estimated bird mortality between 0.63 to 7.70 birds per turbine per year. While mortality rates varied by plant, no plant reported a rate greater than 14 birds per MW per year.

More recently, in 2015, DOE published a report which reviewed recent literature on bird and bat mortality from wind projects. The report found that songbirds accounted for the majority of bird mortality, although the total turbine-related mortality was still relatively small, under 0.02 percent of the total songbird populations. Compared to other sources of bird mortality, turbine-related bird mortality is likely a very small fraction of the total bird mortality each year from collisions with human-made obstacles. For example, studies from 2013 and

2014 suggest that current bird mortality rates due to collisions with wind turbines are only 0.2 percent of those for power lines, and only 0.06 percent of those for buildings. However, impacts on certain birds may be higher.

For example, DOE found higher than expected rates of mortality of eagles due to turbine collisions. While raptors (including the bald and golden eagles) exist in New York, data on their migration patterns are limited. For example, the November 2014 NYNHP analysis was unable to find statewide data on the movement patterns of the State's raptor populations.

Turbine-related mortality of bats appears higher than for birds. For example, bat mortality was more than 200 percent of bird mortality at six New York State wind farms monitoring over a seven month period. The same 2009 NREL study estimated a bat mortality rate from wind turbine of 0.5 to 40.5 bats per turbine per year.

New York has two federally listed bat species: the Indiana entire bat (*Myotis sodalis*) is listed as endangered and the northern long-eared bat (*Myotis septentrionalis*) as threatened. Given recent stressors including habitat loss and white nose syndrome, there is greater concern over the population of bats and their vulnerability to any additional stressors that may adverse impact survival rates.

To minimize the potential impacts on birds and bats, NYSDEC guidelines suggests wind developers site land-based wind projects at least five miles away from major rivers, a great lake, or the Atlantic Coast, at least 2 miles away from any area where special status birds are known to concentrate and/or 40 miles away from an identified bat hibernaculum. In a review of 21 post-construction facilities studies at 19 facilities across five US regions and one Canadian province, bats were more often killed on nights with lower wind speed (generally under six meters per second). The review also found that bats often fly more directly after storm events, which can also lead to higher turbine-related bat fatalities.

Habitat Destruction and Fragmentation

Wind development can also fragment habitat for a range of animals though the placement of the turbines, access roads, and new transmission lines. In general, populations of animals confined to smaller areas are less likely to persist, due to reduced gene flow and ability to respond to area specific events such as changes in weather and climate.

To assess the potential for habitat fragmentation in New York State, the NYNHP study compiled geographic data on wide range of indicators in New York State, including endangered species

distribution and migration, large forested areas, connectivity zones, migrating bird stopover sites, information on streams, and terrestrial landscape resilience. Overall, the project identified a range of areas likely to have important biodiversity considerations. These included some of the high wind potential areas identified, especially in some parts in the western Adirondacks and Eerie-Ontario lowlands.

Noise Pollution

While operating wind projects do not generate air emissions, the operation of wind turbines can create sound that can become a source of noise pollution. Wind turbines emit two types of sound: (1) aerodynamic sounds (such as “whooshing”) created by the rotating turbine blades moving through the air and (2) mechanical sounds created from the internal gears of an operating wind turbine.

In 2013, NYSERDA conducted an extensive review of existing literature on sound and noise associated with wind energy. The highest sound levels reported across the wind energy studies reviewed ranged from 20 to 50 dBA, sound levels associated with a whisper (< 30 dBA) up to the sound levels found inside a house or office (30 to 50 dBA). Wind energy-related sound, however, is affected by a number of site-specific variables including turbine design, wind direction and speed, atmospheric conditions, vegetation cover, topography, local background noise conditions, as well as the person or place impacted by the noise.

Another 2013 NYSERDA report measured sound levels associated with wind turbines at the 126 MW wind farm, located in Wethersfield, New York and found that the winter campaign had the highest wind speeds and monitored sound levels. Several studies have also focused on identifying the environmental conditions that collectively produce the ‘worst case scenario.’ Such conditions include wind turbines operating at night, at low wind speeds and under stable or calm atmospheric conditions. Under such conditions, sound from wind turbines can become trapped (much like fog or smoke) at lower elevations, close to ground. Other factors that can influence sound levels include the number and size of turbines. Researchers have found that more turbines often sound louder due to the synergistic effects across turbines, and larger turbines emit higher amounts of low-frequency noise than smaller turbines.

Visual Aesthetics

NYSERDA’s 2009 wind energy toolkit identifies visual aesthetics as one of the most significant issues that local

communities face when considering new wind energy projects. Such impacts can be especially acute for utility-scale wind projects which consist of larger turbines, higher turbine heights and multiple turbines configured in arrays; however, project location (e.g., exposed hilltop areas), project footprint, turbine spacing, local topography, existing vegetation and land cover, and existing land uses can all influence the visual impacts of a wind project.

Visual impacts vary based on the subjective preferences of affected individuals and an individual's personal viewshed; for example, the number of points from which a resident can see the turbines, the number of turbines the resident routinely sees, the time of day during which turbines are most visible, and/or the location and length of time that a project is visible (e.g., while traveling in the car). Under certain lighting conditions, the moving blades of a turbine can generate "shadow flicker," which may be disruptive to nearby residents and drivers. Seasonality can also change the visual impact of a wind project with visibility increasing during winter seasons when many surrounding areas trees are bare. While some may consider wind turbines "graceful sculptures," others believe wind turbines mar the beauty of the existing natural scenery. Residents of rural communities often value such areas for their openness, remoteness and tranquility.

NYSERDA's 2009 wind energy toolkit notes that utility scale wind projects in rural areas can be particularly disruptive by introducing large-scale structures and machinery into previously undeveloped areas. This includes the wind turbines themselves, as well as electrical transmission equipment and construction vehicles such as cranes and service trucks.

Literature to date suggests that most direct impact of wind turbines is annoyance, an effect which naturally differs by person and can be further compounded by multiple sensory effects (e.g., residents annoyed both visually and acoustically by wind turbines. NYSERDA's 2013 literature review also highlighted examples of surveys provided to residents living in close proximity to wind energy projects about changes in resident's quality of life. As expected, residents living closer to wind projects more often reported lower overall quality of life as compared to residents living farther away. Reported levels of annoyance were also proportional to sound levels; as sound levels approach 40 dBA, the frequency of complaints and instances of annoyance increases significantly.

In addition to annoyance, some residents have reported problems with sleep. While the exact level of sound that

disrupts sleep varies by person. Problems with sleep can also differ based on resident's baseline environmental setting; one study found that six percent of residents in rural communities reported sleep disturbance from wind turbines as compared to four percent of residents in urban communities.

Concerns have also been raised about the potential for more direct health effects created by sound from wind turbine operations, including cardiovascular effects such as blood pressure; heart rate variability; and symptoms such as hypertension, myocardial infarction, angina and cardiovascular disease.

Offshore Wind Energy

While offshore wind development is possible along the Atlantic Ocean and in the Great Lakes regions, all of the incremental capacity projected to develop under the CES is anticipated to occur downstate, along the Atlantic Ocean, in Zones J (NYC) and K (Long Island). Capacity growth of between 400MW and 1,830 MW is projected under the four scenarios, with the lowest capacity expected under the base case Fixed REC scenario and the highest capacity expected to develop under the high load PPA scenario.

Relative to other sources of renewable energy, offshore wind is expensive to develop due to complex technological conditions and the present lack of necessary operational infrastructure. The costs, however, are projected to decline over time as technological innovation continues, competition increases in the offshore wind supply chain, and further development is driven by the demand from more active European markets. Offshore wind has other attributes that may encourage development, including de minimis land needs and over-land transmission requirements for dense coastal population areas with high electricity demand; and higher capacity factors and better peak load co-incidence than other renewable energy sources.

While offshore wind is similar to land-based wind, offshore wind turbines are considerably larger than land-based wind turbines and are constructed to withstand the harsher conditions associated with a marine environment (e.g., salt-water corrosion, storm waves, hurricane-force winds, ice flows, lightning, etc.). The average wind turbine installed offshore in 2015 had a nameplate capacity of approximately 4 MW with a hub height of approximately 90 meters (295 feet) and a rotor diameter of nearly 120 meters (394 feet). Turbine OEMS are producing new turbines rated from 6 to 8 MW with rotor diameters from 152 to 164 meters (499 to 538 ft). For example, the

current BOEM New York call area for offshore wind is located in the Atlantic Ocean, approximately 14 nautical miles due south of Nassau County at water depths between 25 and 40 meters (82 and 131 feet). Current BOEM project feasibility studies envision the use of wind turbines with a rated capacity of 6 to 8 MW, hub heights of 100 to 110 meters (328 to 361 feet) with a rotor diameters of 152 to 164 meters (499 to 538 ft); a rotor diameter more than 50% greater than the 100 meter (328 foot) rotor diameter of typical land-based wind turbines currently being installed.

Environmental Impact Overview

Transporting, constructing and operating offshore wind infrastructure will create impacts, the magnitude of which will depend substantially on the setting, local species, and local communities. Offshore wind can cause impacts that affect human communities as well as terrestrial and marine species. Though most impacts that occur from the construction and siting process are relatively minor or temporary, long term operational impacts, such as impacts on the fishing industry, may have greater effects. The installation of offshore wind farms can take between 1 and 2 years. Once construction is complete maintenance to these facilities is completed daily, and the wind turbines would be fully inspected and serviced around twice a year. Additional repair would be acquired as needed. The design life of an offshore project is within the range of 20 to 25 years. Impacts associated with decommissioning tend to be similar to the impacts associated with the construction process.

Habitat Destruction and Fragmentation

Siting of offshore turbines may permanently displace habitat for a range of animals, including but not necessarily limited to, finfish, reptiles, amphibians, crustaceans, insects, invertebrates, snails, clams and plants. A 2010 report on offshore wind potential in Long Island concludes that project siting should take into account the cumulative loss of plants and animals due to a wind project when assessing environmental impacts, including losses from other nearby human-built structures on the shoreline. Turbine foundations may harm benthic fauna, which could impact fish availability. Changes in the distribution of fish could have cascading effects that could potentially change the ecological makeup of an area. For example, an increased concentration of fish could lead to a displacement in seabird population. Alternatively, there is some evidence that suggests construction of wind turbines may also encourage habitat formation for fish. The turbines, for

example, may help to create artificial reefs, or serve as hard substrate for epibenthic colonizers, which could attract fish, and in turn birds. As example, epibenthic organisms were found to colonize two European offshore wind projects, although full colonies have not yet been observed, potentially due to disruption from storms.

Habitat disruption may also impact the sea floor. For example, cable trenching can temporarily result in increased turbidity. Seafloor impacts are variable depending on the construction period length, the affected area, and the types of ecological communities concentrated in the area. For example, increases in turbidity could decrease photosynthesis by primary producers such as phytoplankton, which could in turn generate ecological effects for benthic organisms.

Displacement can also occur for marine and coastal birds. The long term operation of offshore wind turbines may also obstruct the flyway of major bird species. For example, on Long Island, seabirds may also reduce their use of certain shoreline roosting, nesting and feeding sites due to the barrier created by an array of wind turbines. This avoided area can require more energy expenditure for birds and reduce their chance of survival. Similar to land-based wind, risk of collision is also a concern associated with both construction and operation of offshore wind turbines. However, the impacts of such impacts are not well characterized, and avoidance impacts may vary significantly by site and by bird species.

Habitat loss is likely to be the greatest for species that are less able to move to different areas. While land birds often fly below the height of the turbines, migrating birds flying above water may be closer to the height of the turbines, creating the risk of collisions and a barrier for migration. Studies of offshore wind projects in Europe have indicated that impacts on birds are minimal and that birds tend to avoid turbines, although this may vary by species.

Finally, the construction of an offshore facility could potentially require the construction of new onshore facilities. These could have impacts on coastal habitats and could potentially alter hydrology or water quality. Reduced infiltration and increased runoff could change the hydrologic characteristics of coastal habitats. Erosion could potentially occur, having long term impacts on coastal vegetation. Table 7 summarizes the major taxonomic groups and the potential adverse effects of offshore wind development.

TABLE 7 SUMMARY OF MAJOR TAXONOMOIC GROUPS AND POTENTIAL ADVERSE EFFECTS FROM OFFSHORE WIND DEVELOPMENT

TAXA	POTENTIAL ADVERSE EFFECTS
Benthic community (e.g., corals)	Direct mortality within turbine footprint and along transmission line during construction; disturbance and lethal or sublethal effects via silting/sedimentation.
Fish	Disturbance during construction; displacement and attraction during operations.
Sea Turtles	Mortality or injury from boat collisions; mortality, injury or disturbance from pile driving noise; behavioral changes.
Marine mammals	Mortality or injury from boat collisions; injury or displacement from pile driving noise; displacement during operations; behavioral changes.
Birds	Mortality or injury from collision with turbines; displacement during construction and operations
Bats	Mortality or injury from collision with or effects from turbines during operations.
Source: NYSERDA. 2015. Advancing the Environmentally Responsible Development of Offshore Wind Energy in New York State: A Regulatory Review and Stakeholder Perceptions. NYSERDA Report 15-16. Prepared by Wing Goodale and Kate Williams (Biodiversity Research Institute, Portland, ME). June.	

Noise Pollution

Noise resulting from the construction process as well as long term operation can also be potentially disruptive. For example, in the construction process, the noise associated with pile driving may impact local and migratory fish, sea turtles, and marine mammals. Pile driving is considered to be the most impactful noise resulting from construction; potentially perceptible to seals and porpoises for tens to hundreds of kilometers from construction sites. Noise resulting from construction activities may cause avoidance behaviors for a variety of nearby species; however, it is not expected to have significant population impacts, due to its temporary nature. In addition to pile driving, other sources of noise that can occur from the construction process include ship and barge operation, as well as additional traffic from helicopter and boat operation. These can be temporarily disruptive for affected species. Noise resulting from these construction activities can also cause temporary annoyance for nearby local communities, though the impacts are not expected to be high. Following construction, normal operations could generate noise between 90 to 115 dB at frequencies that are detectable by marine mammals. An acoustic monitoring study by the Cornell Bioacoustics Research Program showed that several endangered whale species occur frequently in the State of New York's offshore planning area. Sound within these areas have the potential to lead to the loss of traditional feeding or mating grounds, which ultimately can lead to long term detrimental population effects. Larger organisms that have greater mobility

would likely temporarily avoid areas of significant construction activity.

Bird and bat populations may also be affected by above water noise from wind turbines. Little is known about how operational noise affects these species since these effects are not easily distinguishable from other aspects of a structure's presence. Avoidance or attraction behaviors may occur, depending on the affected species. For local communities located near wind projects, previous studies have found that the effects are relatively minimal. A study conducted by Pedersen and Halmstad (2003) found very low levels of annoyance from noise for seven percent of respondents, a relatively low percentage. Overall, operational noise resulting from offshore wind technologies is expected to be relatively low.

Visual and Aesthetic Resources

The construction process and the siting of wind turbines and transmission lines could also impact visual resources, although this will depend on the viewshed being effected and the human use of and response to changes in that viewshed. The development process often involves the construction of one or more meteorological towers, which can be disruptive to a natural, coastal landscape. Coastal areas are especially visually sensitive, because land use tends to include parks, recreation areas, and high value property. Once offshore facilities are operational, the presence of the structures could have visual impacts, which would manifest differently for offshore and onshore viewers. Visibility from the shore would depend on the nature of the site. A 2005 study conducted in Ireland found that 66 percent of individuals were initially opposed to a wind facility, though following its construction, 62 percent of individuals noted the visual impact as positive. A Danish study conducted in 2006 noted that most individuals had a neutral to positive perception of visual impacts. However, cultural differences should be regarded in applying results derived from European studies to sites in the U.S. In addition to on-land viewers, offshore viewers may be affected as well. For example, recreational boating is common in Lake Ontario during summer months, particularly in shipping corridors in the St. Lawrence River inlet region. These activities are popular due to the natural viewshed, which could be impacted if there was development of a large offshore wind installation.

Cultural and Historical Resources

Impacts to fisheries are another concern across New York coastal waters. In particular, the presence of offshore wind turbines may restrict the ability of commercial fishermen to fish in the project area of an offshore wind installation, and such disruption may be particularly adverse for fishermen that use mobile types of gear, such as dredges and trawls. On the Atlantic, New York and New Jersey are host to seven and five major commercial fishing ports, respectively. In 2000, New York's commercial fishing population included roughly 84,000 people. Six of New York and New Jersey's ports were within the top 90 ports in the United States in terms of pounds landed and value of fish sold. Project siting should also avoid other human-built infrastructure, such as artificial reefs, dump sites, liquefied natural gas terminals, borrow areas, and important areas for navigation. Avoiding areas used extensively for commercial shipping would help to reduce the risk of collisions and interference with commercial shipping activities. Impacts on recreational fishing are not expected to be significant. In many cases, the area between turbines is expected to be wide enough for recreational fishermen to use gear in the project area. Furthermore, many common recreationally caught fish species may increase in abundance should turbines facilitate the creation of artificial reefs.

Hydropower

Hydropower is one of the oldest forms of energy development, but conventional store-and-release hydropower projects have prominent environmental impacts on river systems and the plants and animals that are connected to and rely on river systems. According to the NYISO 2015 Gold Book, hydropower accounts for 11 percent of New York's summer generation capability, or a total of 4,949 MW. Hydropower today is more focused on opportunities to develop new sources of energy that do not require the construction of new dams or projects that result in significant alteration of rivers and streams.

Future hydropower development in New York is expected to come in one of two forms: increased capacity from optimizing and/or upgrading infrastructure at existing hydroelectric projects; and converting non-powered dams (NPDs) into energy producing dams. New investments are underway across the country to optimize, upgrade and/or augment operations and infrastructure at existing hydroelectric projects to increase electricity generation. Most of the country's existing dams were built in the more than 60 years ago. By installing new

technologies, the lifespan and capacity of many of these older hydroelectric dams can be extended and/or increased.

In 2012, DOE completed a nationwide assessment of the electric power generation potential at existing dams that are not currently equipped to produce power (non-powered dams, or NPDs). DOE focused on approximately 54,000 existing dams, originally constructed for non-power purposes, such as flood control, water supply, navigation, or recreation, with monthly average flows of at least 1 cubic feet per second (cfs) that could be developed to produce electricity. DOE's study identified 33 sites in New York State with potential energy capacity greater than one MW, estimating a cumulative energy potential of approximately 240 MW.

Incremental capacity from upgrades to existing hydroelectric projects and retrofitting NPDs is expected to develop under the CES. NPD retrofits are expected to account for the majority (over 90 percent) of new hydropower energy development. Hydropower upgrades are expected to occur from 2017-2026, while NPD retrofits are expected to begin in 2019 and continue at varying levels through 2030. In terms of geographic distribution, hydropower development is projected to occur primarily in upstate NYISO Zones, with the highest amounts of development occurring in Mohawk Valley (Zone E) and Capital (Zone F); no hydropower development is expected to occur in Zones D (North), I (Dunwoodie), J (New York City) or K (Long Island). NPD retrofits are expected to occur in nearly all NYISO zones, while hydropower upgrades are only expected in three NYISO zones: Zone B (Genesee), Zone E (Mohawk Valley) and Zone F (Capital).

Environmental Impact Overview

Most of the environmental impacts of dam construction have already been incurred at both existing hydroelectric projects and NPDs. The environmental impact of upgrading existing hydroelectric projects or adding energy production facilities and equipment to existing NPDs is anticipated to be relatively small in comparison to the impacts already incurred and as compared to the benefits of more renewable energy generation.

Adding energy production at existing NPDs requires installation of equipment designed to harness energy from the existing water flow properties at a given site. As an example, the upgrade of an existing hydroelectric facility was included under the Tenth Main Tier RPS solicitation. Owned and operated by the Northbrook Lyons Falls, LLC ("Northbrook"), the Lyon Falls Mill Development is an existing 5.6 MW hydroelectric

facility located in Lewis County, NY on the Black River just downstream from the confluence of the Moose and Black Rivers. Northbrook plans to invest $40 million to double the generating capacity of the existing facility to a total capacity of 11.2 MW. As part of this redevelopment, Northbrook will demolish the existing main powerhouse and mothball the single-unit powerhouse. Northbrook will then replace the decommissioned powerhouses with a single powerhouse containing two generating units. In addition to the new powerhouse, the proposed project will also include a new 23 kV transmission line to connect the new powerhouse to the existing National Grid transformer in the Franklin Street Substation. The upgrades will not result in any changes to the existing dam and associated ponds, and the facility will continue to operate in a run-of river mode, where the amount of water that comes into the pond equals the amount of water that flows out of the pond and down the Black River. The principal environmental impacts of upgrading existing hydroelectric plants and retrofitting NPDs for energy generation occur primarily during the construction phase; these are the types of impacts that are common to the construction of any type of energy project. Construction site activities such as vegetation clearing, grading, excavating, steel and building erection, equipment installation, and final restoration will potentially result in short-term increases in air emissions, dust, noise, traffic, visual intrusion, soil erosion, sediment disturbance and water pollution, and disturbance of local ecological and cultural resources. The magnitude of such impacts will vary according to the project location and other site-specific characteristics.

In addition to the common environmental impacts of construction, hydroelectric project upgrades and NPD retrofit projects may have impacts on water quality, for example, dissolved oxygen levels, water temperature, pH, conductivity and total gas pressure. In most cases, these potential impacts can be mitigated through development and implementation of appropriate operating, management, and monitoring plans. For example, in response to concerns regarding dissolved oxygen levels, many projects are required to develop and implement a water quality protection and monitoring plan.

Another unique consideration for all hydropower projects is fish passage and protection; the addition, upgrade or expansion of intake facilities and other infrastructure such as turbines can increase the risk of fish entrainment and fish mortality. Advancements in the understanding of hydropower operations and management of fishery resources, however, are often able to mitigate such potential risks. At the

aforementioned Lyon Falls Mill Development, Northbrook conducted an extensive fish entrainment and impingement study. To minimize potential adverse effects to fish, Northbrook proposed to provide a seasonal minimum fish movement flow of 45 cfs to be released annually from March 15 through November 30 and install a seasonal trashrack overlays with 1-inch clear-bar spacing. At the RRHP, the environmental assessment concluded that survival of fish through the project's powerhouse would be about 95 percent for small and moderate-sized fish and 88 percent for larger fish; translating to a relatively low fish mortality rate of between five and 12 percent, a level not expected to have significant effects on the project area fishery.

Anaerobic Digestion

Anaerobic digestion is a series of biological processes in which bacteria break down biodegradable material in an oxygen-free environment. The product of this process is a biogas mixture and a digestate (liquids and solids). The biogas mixture consists of primarily methane (approximately 50 to 70 percent), carbon dioxide (approximately 30 to 50 percent) and trace amounts of other gases, such as hydrogen sulfide (H2) and ammonia (NH3). This biogas mixture can serve as a fuel to generate heat, hot water, or electricity. Digestate is the remaining solid and/or liquid residuals from the anaerobic digestion process.

As a general matter, the need to reduce GHG emissions and improve resiliency have opened opportunities for the wastewater treatment, agriculture, food processing, and waste management sectors to develop new approaches to treating organic waste. Broad opportunities exist to transform the liability of organic waste into positive energy, environmental, and economic value. Examples of these opportunities include reducing operating costs at wastewater plants, introducing new revenue streams at farms, and developing community-based energy sources and enhanced resiliency.

For all of these reasons, anaerobic digestion at water resource recovery facilities (WRRFs) is expected to contribute to the CES goal. Anaerobic digesters are designed to stabilize organic materials (e.g., sewage sludge, which is a byproduct of the physical, chemical and biological processes used in the treatment of sewage, manure, high strength food and beverage waste). More recently, some anaerobic digesters are increasing biogas production by accepting food waste diverted from landfills to serve as additional feedstock.

In 2007, NYSERDA conducted a market assessment of anaerobic digesters within New York's municipal wastewater

sector. This analysis consisted of a survey of 590 municipal WRRFs, of which approximately 145 WRRFs were found to have anaerobic digestion facilities in place.

While the 145 WRRFs identified with anaerobic digestion facilities in place were estimated to represent 75 percent of the State's overall wastewater treatment capacity, NYSERDA's market characterization also found a significant level of untapped potential across these same WRRFs. Specifically, NYSERDA found that a number of the 145 WRRFs with anaerobic digestion facilities in place did not (at the time of the survey) operate their digesters, operated their digesters at a reduced rate, or relied on undersized anaerobic digestion facilities. To the extent that existing WWTPs with anaerobic digestion facilities in place have access to food waste and other organic materials, further increases in electricity generation may also be possible.

The prime potential for farm-based digester system is at New York State's large dairy farms with 750 or more mature dairy cattle equivalents (MDCEs) in their herds. About 190 of these farms have already installed a digester system or applied for incentives for one. These herds on these farms total over 300,000 MDCE which can provide enough manure feedstock to produce about 80 MW of renewable power. If the increased focus on food waste management results in significant quantities added to these farm digesters, the total power output could double. If it is projected that the CEF and CES initiatives are sufficient to bring enough farms to adopt anaerobic digestion so that half of the potential is reached by 2030, then the output range would be between 40 and 80 MW depending on the quantities of food waste treated.

The CES is expected to result in the development of a total of 53-54 MW of new generation at existing WWTPs with anaerobic digesters. Of this amount, the majority (34 MW, or 64 percent) is expected to be developed at WWTPs in Zone J, New York City.

Environmental Impact Overview

Anaerobic digestion is generally considered a mechanism by which existing operations at WWRFs, agricultural facilities, and food and beverage manufacturing facilities can be improved. Implementation of the CES in this case will have minimal adverse environmental impacts given the expectation that it will result in more optimal use of the anaerobic digesters that are already installed. Anaerobic digestion at WRRFs will reduce the volume of sewage sludge that ultimately is transported off-site for disposal. In the agricultural context, anaerobic digestion reduces the odors associated with manure

storage, such that the manure can be applied to fields close to the time the crops will need the nutrients inherent in the manure. Moreover, in cases where anaerobic digestion facilities are adapted to accept food waste, such operations can further reduce waste that would otherwise end up in landfills.

Anaerobic digestion can also reduce fugitive greenhouse gas emissions that would otherwise be released at landfill sites during natural organic decomposition processes, as they are typically equipped with flares that convert fugitive methane emissions into CO2 and water. When captured methane is converted into electricity on-site, such operations may contribute to greenhouse gas reductions, the magnitude of any such contributions, however, will depend on facility-specific factors such as the nature of the feedstock.

Digestate, the effluent from the anaerobic digestion process, typically consists of liquids, remaining biomass, and inorganic solids. The liquid is typically separated from the solids. Depending on the chemical composition of the liquids, some can be re-used as irrigation water for agricultural crops, recycled for use in composting processes, or converted into fertilizer. Similarly, some solids can be used for a variety of value added products, including fertilizer, compost, and soil amendments for agricultural crops. In some cases, however, residual digestate may require additional treatment and/or disposal in landfills; however, the overall net impact of anaerobic digestion on waste production is generally positive. Specifically, compared to operations without anaerobic digestion, the waste generated may be reduced in volume, is chemically stable and therefore nearly odorless, and contains fewer levels of harmful pathogens.

Biomass Energy

Large scale biomass plants produce electricity through the combustion of organic matter derived through recently living organisms. Biomass can consist of a variety of materials but is typically plant based. Biomass systems can either be open-loop or closed-loop. In open-loop systems, the biomass resources are typically byproducts of other activities such as the wood-processing industry in New York, or materials diverted from a municipal solid waste stream. Closed-loop systems use fuel grown from land solely dedicated to the production of energy resources. The environmental impacts of large scale biomass are highly dependent on the combustion technology, the type of input, and the method by which the input is grown or collected.

Combined heat and power (CHP) is often used as a distributed energy resource to meet onsite power needs, but a

large biomass CHP installation could potentially sell large amounts of power to the wholesale market.

There are multiple types of potential biomass inputs, each with different environmental impacts. Types of biomass that may be used as main tier renewable resources under the CES include:

- Agricultural residues;
- Harvested wood;
- Silviculture waste wood;
- Mill residue wood;
- Pallet waste;
- Site conversion waste wood;
- Sustainable Yield Wood (woody or herbaceous); and
- Urban Wood Waste and Refuse Derived Fuel.

NYSDEC regulations define “eligible biomass” that is considered “sustainably harvested” for purposes of the CO2 Budget Trading Program, 6 NYCRR Part 242. NYSDEC policy provides guidance for determining whether sources of woody biomass, and unadulterated wood and wood residues are considered “sustainably harvested” so that NYSDEC can determine on a case-by case whether emissions from that source would be sequestered in sustainable managed forests. In addition, under the RPS program, biomass obtained from forest resources must meet state guidelines for sustainable harvesting.

The biomass sources listed above can generally be divided into three categories – wood and agricultural waste products, forest (silviculture) resources, and dedicated energy crops. Each category of biomass will have different environmental impacts dependent on the site-specific implementation. The remainder of this section discusses the general, potential environmental impacts of large-scale biomass implementation.

Land Use

Expanded use of biomass may have a variety of potential land use impacts depending on the type of conversion technology and the type of input. Impacts associated with the construction of a main-tier biomass facility will be similar to a comparably sized non-biomass electric generation facility including: converted land area and short-term increases in dust, noise levels, traffic, visual intrusion, and ecological disturbances. Note that these impacts do not apply to co-fired facilities, which do not require significant new construction. Increased closed-loop biomass under the CES may result in more significant land use changes as existing agricultural, pastoral, or forest land is converted to bio-fuel crops. A large scale

shift of agricultural land from food crops to energy crops may impact food prices or drive the expansion of agriculture to currently forested land. However, negative impacts may be mitigated by NYSDEC regulations which require that biomass be sustainably harvested. For example, under the RPS program, biomass obtained from forest resources must meet state guidelines for sustainable harvesting.

To the extent that pastoral land, marginal land, or land currently cultivating food crop is converted to energy crops, increased biofuels may positively impact native wildlife, as many biofuels have a higher wildlife quality than traditional agricultural crops. For example, the predominant energy crop in New York State consists of fast growing willow trees. There are currently 1,200 acres of land in New York dedicated to willows for energy use. When properly managed, these crops can increase wildlife diversity and protect riparian habitats compared to traditional agricultural crops. DOE estimates that about 190 million acres of land in the United States is available for energy crops such as switchgrass, poplar trees, and willow trees. One hectare of land area dedicated to willow trees can produce enough fuel to generate approximately 16 MWh annually. The Northeast has an estimated two million hectares of marginal land no longer used for agriculture that could be suitable for biomass production. Willow trees also take up nutrients and heavy metals and may be used to effectively treat a number of waste sources including municipal waste, sewage sludge, and distillery effluent.

New York State has large amounts of forest land which, if managed and harvested carefully and sustainably, could provide biomass fuels without increasing GHG emissions or significantly impacting wildlife or recreational activities. To the extent that currently un-forested lands (e.g., marginal and nutritionally depleted areas) are converted to grow biomass, the net increase in vegetation may also reduce carbon levels. However, if conversion of lands to grow biomass results in habitat fragmentation, this may result in negative effects on wildlife species.

Water Quality

Water use for large scale biomass projects may also vary depending on the type of conversion technology and biomass input. Water quality may increase if food crops are converted to energy crops. Energy crops typically require less potassium, agricultural lime, herbicides, insecticides, and other agricultural chemicals but may increase use of nitrogen and phosphorus. Planting of energy crops may decrease sedimentation

and nutrient and chemical deposition into surface bodies of water. If non-agricultural land is converted to energy crops, local water sedimentation may increase. The water requirement for energy crops is not significantly different than food crops. Water is also required during the biomass combustion process. In a typical biomass plant, most of the water will be used as part of the cooling system to condense the steam for reuse. The water requirements for biomass combustion are similar to a similarly-sized fossil fuel power plant.

Air Emissions

Air emissions associated with biomass vary depending on the conversion technology and biofuel input. Emissions would typically decrease or remain the same for biomass that is co-fired with natural gas compared to natural gas-only electricity. Sulfur emissions would be reduced in direct proportion to the amount of biomass used in the plant because most biomass inputs have near zero sulfur content. Low mercury content in biomass would lead to a similar reduction in mercury emissions. Impacts on other criteria pollutants are less certain – NOx emissions may either increase or decrease depending on site specific conditions (e.g., properties of the fuel, type of emissions control technologies, or operating conditions at the plant). Total particulates do not typically increase after introducing biomass, but emissions of particulate matter smaller than 10 microns (PM10) and 2.5 microns (PM2.5) may increase. In some cases minor, increases in carbon monoxide may occur. The impact of biomass on criteria pollutants in co-firing applications is a subject of ongoing research, and is highly dependent on site specific factors.

Stand-alone combustion of biomass would likely have similar impacts to co-firing applications. Specific impacts would be highly dependent on the emissions controls at any particular power plant. Biomass plants tend to be smaller than typical fossil fuel-fired plants and are often less efficient and less well equipped with emissions controls than existing natural gas plants. If not carefully planned and implemented utility scale biomass may result in increased carbon monoxide and PM10 particulates than an equivalent amount of fossil fuel-based generation. Particulate emissions from biomass plants between 500 kW and 10 MW may vary significantly depending on technology and operation. Other air pollutants such as mercury and sulfur would be reduced. Levels of NOx emissions from biomass facilities may vary between 60 mg/MJ and 170 mg/MJ. Emissions of all criteria pollutants may be reduced through biomass gasification. Criteria pollutant emissions from biomass gasification plants are similar to emissions from conventional

natural gas plants and substantially lower than coal or oil plants.

Direct CO2 emissions from biomass combustion are high compared to most fossil fuels but if sustainably managed the CO2 emitted during combustion can be equivalent to the CO2 sequestered during growth of the stock, depending on the timeframe being considered. Whether a biomass system can be considered carbon neutral depends on a variety of factors, including, but not limited to:

- The feedstock type;
- The management and procurement of the feedstock;
- The feedstock transportation method;
- The energy generation technology; and,
- The timeframe to replenish the feedstock.

Overall lifecycle GHG emissions are highly dependent on site specific factors. Some biomass fuels are more carbon intensive than others; thus a robust accounting is required before the lifetime GHG emissions can be determined. Depending on the factors listed above, closed-loop cycles may be carbon neutral if the carbon released during combustion is equivalent to the carbon absorbed while the biomass is grown. Open-loop cycles may result in GHG emissions reductions because the combustion process produces primarily CO2 while natural biomass decay produces CO2 and methane. Methane has more global warming potential than CO2; decreases in methane production result in a lifecycle reduction of greenhouse gases. Note that the net emissions of a biomass system are dependent on the timeframe being considered, as both sequestration and natural processes of decay occur over long periods of time.

Health Impacts

Increased biomass combustion could have adverse health impacts. Biomass is often associated with high concentrations PM10. Humans may not filter these fine particulates through the nose, and they may end up in the lungs or alveolar region. Long exposure to fine particulates may cause health problems such as increased morbidity and exacerbation of respiratory and cardiovascular ailments.

Waste Impacts

Increased large scale biomass may result in decreased wood waste because clean residual wood would be used in biomass burners instead of landfill disposal. Increased biomass combustion may result in increased solid waste such as construction wastes, solid biomass boiler ash, stillage cake and syrup, and lignin. Solid biomass ash and lignin are

potentially useful consumer products. Large scale biomass facilities may also produce significant amounts of bottom ash requiring disposal either in landfills or spread over area lands. Biomass produces less hazardous waste overall compared to coal combustion.

Longer-Term Effects

Longer-term effects are those occurring later in time and farther away, but which are still reasonably foreseeable. New York's energy industry will not result from completion of one or two large actions but rather will evolve over long periods of time in response to numerous separate individual initiatives. The greatest longer-term, indirect environmental impact of the CES, is the reduction in the amount of the State's energy generated from fossil fuel-based sources of energy. Fossil fuel power plants are the second largest (and most concentrated) source of emissions, accounting for approximately 16 percent of all greenhouse gas emissions in New York State. Reductions in the State's use of and reliance on fossil fuel electric generation will in turn result in significant environmental and public health benefits.

Criteria Air Pollutants

Fossil fuel electric generation is a major source of criteria air pollutants. In New York State, electric generation from fossil fuel-based resources produced 29,682 tons of NOx and 54,627 tons of SO2. The release of SO2 and NOx, from fossil fuel generated power plants, also leads to the formation of particulate matter PM2.5, ozone, and other acidic compounds. Mercury (Hg) compounds are another pollutant from fossil fuel energy generation, particularly from coal powered plants. Criteria air pollutants are particularly important factors influencing local and regional air quality. These pollutants can negatively affect air quality, visibility, and public health.

While the REV and CEF are intended to reduce criteria air pollutant emissions from large-scale fossil-fuel generation, to the extent that the REV increases the use of distributed fossil-fuel generation (e.g., backup generators or CHP), the net effect of the REV on criteria air pollutants in certain localities is uncertain. If increased use of distributed fossil-fuel generation is inadequately mitigated, local air quality could deteriorate which, in turn, could adversely affect the efficacy of State or Regional Implementation Plans submitted to EPA under the CAA or the recently proposed Clean Power Plan.

Greenhouse Gases

A key long-term outcome of the REV and CEF is to significantly reduce the emissions of greenhouse gases form the State's energy sector. In New York State, electric generation emitted 43.4 million tons of carbon dioxide equivalent gas (CO2e) in 2010. Greenhouse gases such as carbon dioxide contribute to the global trend of rising average temperatures, changes in precipitation patterns and rising sea levels. As temperatures continue to rise and climate change further intensifies, the negative impacts of climate change on New York State's residents, economy and natural ecosystems will also increase. Actions (like CES) that stem the further rise of atmospheric greenhouse gas levels and prepare the State for the impact of climate change can reduce the magnitude of such impact both within New York State and globally.

Public Health

Emissions from fossil fuel based electric generation can negatively affect human health. Exposure to ozone can aggravate lung diseases including asthma, emphysema, and chronic bronchitis, as well as increase the risk of premature mortality from heart or lung disease. Health effects from PM2.5 include aggravated asthma, irregular heartbeat, decreased lung function, nonfatal heart attacks, and premature mortality in those with heart or lung disease. NOx can increase the risk of respiratory diseases and exacerbate existing respiratory symptoms, especially in children, elderly, and the poor. Individuals with asthma may experience aggravated symptoms when exposed to NOx. Additionally, exposure to NOx can cause irreversible structural changes to the lungs. One study estimated health impacts from fossil fuel energy sources at $362 to 886 billion in economic value annually, based on premature mortality, workdays missed, and direct costs to the U.S. healthcare system resulting from PM2.5, NOx, and SO2. The same study estimated that the economic value of negative health impacts was equal to approximately $0.14 to $0.31 per kWh. These costs may be even higher if greenhouse gas emissions are included.

Water, Land and Ecological Resources

Avoided fossil fuel and nuclear generation should also reduce water demand and improve the health of aquatic ecosystems. Both coal combustion in power plants and nuclear plants use significant quantities of water for producing steam and cooling. For natural gas combustion, boilers and combined

cycle systems also require water for cooling processes. If process or cooling water comes from a surface water source, water intake structures are required to withdraw the necessary water for the plant's operation. Such intake structures can stress or directly take aquatic organisms held against or passed through intake screens.

Coal-fired generation, natural gas boilers, and natural gas combined cycle systems all release wastewater with excess heat and hazardous chemicals during plant operation. Thermal water discharges elevate water temperatures, which can harm organisms, destroy or degrade habitat, or form barriers to existing migratory routes. Hazardous substances in wastewater can impair water quality, as can deposition of acidic air pollutants (i.e., acid rain).

Coal combustion generates significant amounts of solid waste. Much of this waste is disposed of in abandoned mines or landfills, potentially allowing pollutants to leach to ground or surface water. Soil contaminated by pollutant deposition near coal-fired power plants can require years to recover. Acid rain due to emissions of NOX and SO2also impairs the growth of and causes death in trees.

Aesthetic, Visual, Cultural and Historic Resources

Reduced emissions of NOX and SOX and associated reductions in particulate matter due to avoided fossil fuel use would improve visual and cultural resources in New York. Fine particles are the primary cause of reduced visibility in some areas in the U.S., including national parks and wilderness areas. Reduced particle pollution will also help to protect stonework, including culturally important monuments, from staining and other damage.

While such improvements are expected to accrue from implementation of the CES, the CES' focus on development of LSR may alter the visual and cultural landscape of the State's more rural areas in upstate New York, where large scale solar and wind facilities are more likely to be developed. Large-scale solar and wind operations have relatively large land use requirements. When such operations are sited in flat areas in rural communities, the industrial nature of solar and wind facilities can offer strong contrasts to the relatively rural landscape that they inhabit. To the extent that a specific rural or agricultural community becomes host to multiple LSR projects, adverse impacts on the community's aesthetic, visual and cultural resources are possible. In addition, expanded use of biomass could result in a shift of agricultural land from food crops to energy crops and may drive the expansion of

agriculture to currently forested land, which could result in habitat fragmentation.

Other Unanticipated Technologies

The CES is expected to be implemented over a 13-year timeframe (2017 to 2030). It is possible that increased levels of demand for large scale renewable energy will spur innovation and the development of currently unanticipated technologies. New York State ranks second nationally in cleantech patents and the number of cleantech patents registered each year is on the rise. As technology changes and new technologies are developed, there is potential for unforeseen environmental impacts. Depending on the type of technology, it is possible that construction activities or operation and maintenance of the technology could create environmental impacts. To the extent that any new technologies further displace or promote the displacement of fossil fuel electricity generation, or lower electricity consumption, such technologies could generate positive environmental impacts. The net impact of other unanticipated technologies is, by its nature, unknown at this time.

Cumulative Impacts

The CES is a program complementary to the Commission's other clean energy efforts. In the Staff White Paper, DPS Staff describes the REV and the CES as programs which "will promote each other's achievement." In addition to the REV, the CES will also work in concert with other, ongoing, State energy initiatives, including, but not necessarily limited to: (1) the Clean Energy Fund, (2) the draft 2014 New York State Energy Plan; (3) the New York Green Bank (Case 13-M-0412); and (4) the NY-Sun Initiative.

In addition to State-level clean energy initiatives, a number of energy-related efforts at the federal level may interact with the CES. By considering cumulative impacts, the intent of SEQRA is to identify actions that may be insignificant by themselves, but which can degrade environmental resources over time when considered together. These considerations of potential cumulative effects include:

- The CES is anticipated to engender overall positive environmental impacts, primarily by reducing the State's use of, and dependence on, fossil fuels.
- Many of the locations that would be considered for new large scale land-based wind and solar projects are in upstate New York. To the extent that some communities become host to multiple installations of new LSR projects, certain cumulative

negative impacts (e.g., aesthetic effects of large scale wind and solar energy or loss of agricultural lands) may constrain the overall positive impacts of the CES. A number of regulations, policies, and best practices serve as measures that will mitigate adverse impacts that may arise from activities undertaken in response to the CES.

- In general, the State and Federal policies and initiatives identified in this section as likely to interact with the CES are designed to reduce the adverse economic, social and environmental impacts of fossil fuel energy resources by increasing the use of clean energy resources and technologies.
- Cumulative site-specific impacts of the CES are not known at this time and are beyond the scope of this SEIS. This SEIS provides a generic description of the potential environmental impacts of the CES on land and water resources, agriculture, cultural and aesthetic resources, terrestrial and aquatic ecosystems and other individually relevant impacts. Appropriate federal, state, and local permitting and environmental review processes will identify, evaluate, and mitigate potential site-specific impacts.

C. Mitigation

Federal and State Regulations Relevant to Operations of Nuclear Facilities

One key mitigation measure is compliance with existing federal and State regulations, which are designed specifically to protect human health and the environment from activities that could otherwise result in significant and/or adverse impacts. The U.S. Nuclear Regulatory Commission (NRC) regulates commercial nuclear power plant through licensing, inspection, and enforcement. The NRC mission states, “The NRC licenses and regulates the Nation's civilian use of radioactive materials to protect public health and safety, promote the common defense and security, and protect the environment.” The Occupational Safety and Health Administration coordinate with the NRC to regulate radiological and industrial safety at operating facilities.

New York State also plays a role in ensuring the safe use of radioactive materials. Through various laws, the New York Department of Labor, New York State Department of Health, New York State Department of Environmental Conservation, and New York City Department of Health and Mental Hygiene Regulations all play a role in nuclear facility regulations.

Federal and State Regulations and Guidance Potentially Relevant to Utility Scale Clean Energy Activities

Regulations that are particularly applicable to utility-scale renewable energy projects include site-specific permitting processes, the State Environmental Quality Review (SEQR) process, and Article 10 of the Public Service Law. Under Article 10, a state siting board is responsible for siting and permitting LSR projects with a generating capacity greater than 25 MW. The board is required to enforce environmental laws and standards except for local ordinances it specifically determines should not be applied to a particular project.

The environmental impacts of a proposed renewable energy project under 25 MW in size are typically assessed in accordance with SEQRA by the host town board, regional planning commission, county agency, or other local authority. The town or local agency may impose mitigation measures that it finds are necessary to minimize any adverse environmental impacts.

As a result of the RPS, state and many local agencies are familiar and experienced in applying the array of regulations, guidance and tools available to review LSR projects (on a project-by-project basis) and to identify appropriate mechanisms to avoid and/or minimize the potential adverse impacts of LSR projects. For example, under the RPS program, biomass obtained from forest resources must meet state guidelines for sustainable harvesting.

D. Growth-induced Aspects and Socioeconomic Impacts

Successful implementation of the REV and CEF, the additional measures proposed to meet the CES 50 by 30 goal, and the CES nuclear maintenance program (NMP) will generate several types of public benefits. This section first provides a qualitative description of the growth-inducing aspects of the programs that lead to potential public benefits. Next, this section presents a summary of potential regional economic impacts of continued generation of energy by eligible nuclear plants and the construction of additional LSR supply resources.

Depending on the mechanisms employed, increasing the supply of renewable resources to meet 50 percent of New York State's demand by 2030 is expected to result the following types of public benefits:

- Public health benefits due to avoided emissions of GHG and criteria air pollutants. As increased use of renewable energy sources leads to improved air quality, society benefits from reduced health impacts and increased employee productivity. For example, as air quality improves, state health care

expenditures for treatment of asthma, acute bronchitis, and respiratory conditions may be reduced.

- Ecosystem services benefits related to the reduction in emissions and due to reduced impacts on land and water uses, as renewable sources are incorporated into New York's energy supply portfolio in lieu of investment in fossil fuel sources. For example, "wind and solar energy require essentially no water to operate, and thus do not pollute water resources or strain supply by competing with agriculture, drinking water systems, or other important water needs."
- Climate change benefits related to the reduction in the State's reliance on fossil fuel energy. As discussed in Chapter 3 of the 2015 GEIS, climate change is expected to increase air temperatures which will in turn intensity water cycles through increased evaporation and precipitation. In New York, more intense water cycles are expected to lead to increases in localized flash and coastal flooding, increases in the frequency and intensity of extreme precipitation and extreme heat events, longer summer dry periods, lower summer flows in large rivers, lower groundwater tables, and higher river and in-stream water temperatures.

Measures proposed under the CES 50 by 30 goal and CES nuclear maintenance program may also serve to maintain fuel diversity. It is expected that the addition of new renewable electricity supplies may reduce the State's reliance on natural gas. Such changes may also reduce the exposure to fossil fuel-related energy security challenges and supply interruptions, thereby increasing the security of New York's electric energy supply.

Impacts on Growth and Community Character

The preservation of eligible nuclear facilities should not entail significant changes in the character of the host communities. The primary effect should be the preservation of jobs, local services, population levels, tax revenues, and existing community structures. The same communities may face major changes toward the end of the period under analysis, as the licenses expire, but those changes are not attributable to the CES.

Meeting the 50 by 30 goal through the addition of renewable power sources will have significant impacts on some communities. Many of the locations that would be considered for new large scale land-based wind, solar, and hydropower projects are in upstate New York. In these areas, the prevailing settlement pattern is low density towns and villages, with large rural areas. These communities may see both positive and

negative impacts associated with the construction and operation of new renewable power plants. For example, while construction of a wind plant will have impacts on a rural viewshed, the revenue earned by a farmer from wind leases may contribute to the preservation of existing farmland and rural/agricultural landscapes. Although leasing arrangements vary widely, a 2005 NYSERDA study estimated a typical lease payment of approximately $4,000 per MW per year, with an annual inflationary adjustment. A more recent study undertaken by Windustry in 2009 estimated an average fixed payment lease rate of $2,820 per MW, with values ranging from $1,515 to $5,387 per MW, equivalent to a fixed payment of approximately $4,230 for a 1.5 MW wind turbine per year. As these large scale renewable resources are added, there may also be some changes to community character and viewsheds resulting from addition of transmission lines. The specific nature of the potential community impacts will be evaluated in site-specific proceedings following implementation of the CES.

Environmental Justice Impacts

Actions taken under the CES programs may occur in environmental justice communities and may have the potential to disproportionately affect low-income and minority populations within these communities. Regulations at 6 NYCRR Part 487 establish a framework for evaluating the potential environmental justice issues associated consistent with siting a major electric generating facility pursuant to PSL Article 10. Implementation of actions to meet the CES 50 by 30 goals could result in locating new renewable energy facilities, such as wind, solar or biomass. Depending on siting decisions, facilities could be located in a potential environmental justice area (PEJA). Such siting proposals could result in the lead agency performing an EIS to assess, among other things, whether the action under consideration would disproportionately affect PEJA populations, and whether alternative actions would have less impact. As the areas with the highest wind resource potential are primarily offshore, wind energy developments are not as likely to fall within currently defined PEJAs.
In addition and as discussed above, an increase in the penetration of renewable resources could lead to an increase in electricity prices. Increased costs of electricity may affect low-income people disproportionately. While the electricity price impact are uncertain at this time, programs aimed to support low income energy consumers through the REV and CEF proceedings, and continued maintenance of nuclear power plants, may help to offset any increase in prices resulting from increased consumption of renewable energy.

E. Effects on Energy Consumption

The proposed CES will establish a mandate that 50 percent of the electricity consumed in New York by 2030 be supplied by renewable resources. A key outcome of the mandate is expected to be greater penetration and adoption of renewable energy at the grid scale and in behind the meter installations. In addition, the CES NMP will enable continued generation of energy by eligible nuclear plants.

While the implementation of the CES is intended to change the State's electric generation portfolio, it is not expected to directly affect the amount of electricity used or the amount of energy conserved. Future actions under the State's REV and CEF policies, energy efficiency programs, as well as other factors, will directly impact demand. The maintenance of qualified nuclear facilities and installation of new renewable sources under the CES will affect the characteristics of the supply sources that will be available to meet that level of demand. Thus, the impact of the proposed CES will be to ensure at least 50 percent of the energy used in New York is sourced from renewables.

F. Conclusion

The CES program is expected to yield overall positive environmental impacts, primarily by reducing the State's use of, and dependence on, fossil fuels, among other benefits. In conjunction with other State and Federal policies and initiatives, CES is designed to reduce the adverse environmental, social and economic impacts of fossil fuel energy resources by increasing the use of clean energy resources and technologies.