STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

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

CASE 16-E-0270 - Petition of Constellation Energy Nuclear Group LLC; R.E. Ginna Nuclear Power Plant, LLC; and Nine Mile Point Nuclear Station, LLC to Initiate a Proceeding to Establish the Facility Costs for the R.E. Ginna and Nine Mile Point Nuclear Power Plants.

ORDER ADOPTING A CLEAN ENERGY STANDARD

Issued and Effective: August 1, 2016

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At a session of the Public Service Commission held in the City of Albany on August 1, 2016

COMMISSIONERS PRESENT:

Audrey Zibelman, Chair
Patricia L. Acampora
Gregg C. Sayre
Diane X. Burman, concurring

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BY THE COMMISSION:

I. INTRODUCTION AND SUMMARY

By this Order, the Commission determines that a series of deliberate and mandatory actions to build upon and enhance opportunities for consumer choice are necessary to achieve State environmental, public health, climate policy and economic goals; to enhance and animate voluntary retail markets for energy efficiency, clean energy and renewable resources; to preserve existing zero-emissions nuclear generation resources as a bridge to the clean energy future; to ensure a modern and resilient

energy system; and to accomplish its objectives in a fair and cost-effective manner. In accordance with the statutory obligation that agency actions must be reasonably consistent with the most recent State Energy Plan (SEP), the Commission adopts the SEP goal that 50% of New York's electricity is to be generated by renewable sources by 2030 as part of a strategy to reduce statewide greenhouse gas emissions by 40% by 2030.[1]

In furtherance of that goal, and mindful of the Commission's role as a State regulator sharing jurisdiction with the federal government, in this Order the Commission also adopts a Clean Energy Standard (CES) consistent with the SEP goal, including: (a) program and market structures to encourage consumer-initiated clean energy purchases or investments; (b) obligations on load serving entities to financially support 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 financially support the maintenance of certain existing at-risk small hydro, wind and biomass generation attributes; (e) a program to maximize the value potential of new offshore wind resources; and (f) obligations on load serving entities to financially support the preservation of existing at-risk nuclear zero-emissions attributes to serve their retail customers.

[1] By Executive Order, it is also a goal of the State of New York to reduce current greenhouse gas emissions from all sources within the State 80% below levels emitted in the year 1990 by the year 2050. Executive Order No. 24 (2009) [9 N.Y.C.R.R. 7.24; continued, Executive Order No. 2 (2011) 9 N.Y.C.R.R. 8.2].

State Policy Goals

New York has adopted strongly proactive policies to combat climate change and modernize the electric system to improve the efficiency, affordability, resiliency, and sustainability of the system. One of the primary benefits of the CES will be a reduction in total emissions of air pollutants resulting from fossil fuel combustion. Increasing the contribution of renewable generation to meet the 50 by 30 mandate will not only reduce carbon emissions, but will reduce nitrogen oxides, sulfur dioxide, and particulate matter emissions as well by thousands of tons per year. Increased use of renewable energy sources leads to improved air quality and societal 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. Reduced exposure to fine particulates may avoid other health problems such as increased morbidity and exacerbation of respiratory and cardiovascular ailments.

The CES adds to the regulatory and retail market changes that New York is already pursuing under its Reforming the Energy Vision (REV) program. Through existing initiatives, clean energy resources including energy efficiency, distributed energy, advanced storage and load control technologies are being integrated into the system to promote a modern, resilient and cost-effective network. As the Commission's stated in its 2013 initiating Order, the time has come to integrate clean energy as core, as opposed to ancillary, to our energy systems. Unlike in even the recent past, advancements in the capabilities of resources such as wind, solar and storage to work in combination, both on the bulk power system and behind the meter, results in the ability to develop and operate the grid to be

more responsive, efficient, secure and clean. Through better pricing and retail market design, New York is positioning itself to create a two-way fully transactive electric system that uses demand and clean energy as solutions that drive consumer value and choice. As noted in the order approving the Clean Energy Fund, a significant aspect of gaining this value is ensuring that markets are created that have the scale and scope to attract investment and reduce costs. The CES provides both.

For New York, the need and ability to take steps to combat climate change is immediate. New York's vulnerability to extreme weather events was vividly illustrated in 2011 and 2012 by the storms Sandy, Irene, and Lee. These storms, however, were only the most visible warning signs. Climate change will cause not only sea level rise, heat waves, and extreme weather events, but also threatens massive economic and lifestyle disruption from damage to agriculture, water resources, public health, energy and communication systems, and the natural ecosystems that define and support communities.[2]

Nationally, the U.S. Environmental Protection Agency estimates that in the absence of emission reductions and adaptation measures, damage to U.S. coastal property by 2100 will exceed $5 trillion.[3] Power outages caused by severe weather

[2] See Intergovernmental Panel on Climate Change, IPCC, 2014: Climate Change 2014: Synthesis Report, Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change; Case 14-M-0101, Reforming the Energy Vision, Final Generic Environmental Impact Statement, Chapter Three (February 6, 2015); and New York State Climate Action Plan Interim Report, Chapter Two (November 9, 2010).

[3] EPA 2015. Climate Change in the United States: Benefits of Global Action. United States Environmental Protection Agency, Office of Atmospheric Programs, EPA 430-R-15-001.

between 2003 and 2012 are estimated to have already cost the U.S. economy an annual average of $18 billion to $33 billion.[4]

Another weather event that revealed the vulnerability of New York's energy system was the polar vortex of January, 2014, which resulted in severe price spikes for gas and electric customers. In that event, the vulnerability was due to a prolonged and extremely cold weather system coupled with over-reliance on natural gas for both heating fuel and electric production. Electric customers suffered terribly from a streak of cold weather that increased prices by more than $2 billion over a three-month period.[5] The price increases were especially challenging to businesses and low-income and fixed-income customers.[6]

The 2015 SEP recognizes the importance of ensuring that New York's power system is modern, clean, and diverse. It concludes that to achieve these objectives, 50% of all electricity used in New York by 2030 should be generated from renewable sources.[7] The SEP goal for renewable electricity is in the context of broader clean energy and economic development goals: 40% reduction in greenhouse gas emissions, 50% renewable electricity, and 600 trillion Btu in energy efficiency gains. An overwhelming majority of parties to the CES proceeding, as well as thousands of public comments, support the renewable

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[4] Economic Benefits of Increasing Electric Grid Resilience to Weather Outages, President's Council of Economic Advisers and the U.S. Department of Energy's Office of Electricity Delivery and Energy Reliability, with assistance from the White House Office of Science and Technology, August 2013.

[5] This figure is mitigated for some customers by hedged contracts although the extent of hedging value during that period is not known.

[6] Northeastern Winter Natural Gas and Electricity Issues," U.S. EIA, January 7, 2014.

[7] The Energy to Lead, 2015 New York State Energy Plan, p.112.

resource objectives of the SEP. The goals directed in the SEP are aggressive. Ambitious goals are needed, however, to provide scale to the industry and impetus to markets. Moreover, given the urgent challenge of climate change, the SEP goals should be considered the minimum to be achieved, not the maximum. Consistent with these realities and with the State's policy objectives, including the actions the Commission has already taken under the REV program, the Commission finds in this Order that achieving a fifty percent renewable goal by 2030 is not only achievable but is an imperative of the Commission meeting its statutory responsibilities.

By letter of December 2, 2015, Governor Andrew Cuomo directed the Department of Public Service Staff (Staff) to develop and propose a CES that if adopted would convert the SEP goals into enforceable requirements. Staff filed its White Paper on Clean Energy Standard (White Paper or Staff Proposal) on January 25, 2016. This Order addresses the Staff proposal, the parties' written filings, and the outpouring of public comments that have followed the Staff proposal. In this Order, the Commission adopts a CES consistent with the SEP goal.

The 50 by 30 goal is not only part of a larger greenhouse gas goal, it is part of the State's sweeping initiative to transform the way energy is produced, delivered, and consumed. REV encompasses many interrelated initiatives, through which energy efficiency and clean energy development achieve not only carbon reduction but also market animation and grid modernization. There are many participants in REV beyond the Commission. The New York Power Authority (NYPA) and the Long Island Power Authority (LIPA), for example, will participate in the CES not only to conform to a carbon requirement but to engage in an integrated statewide policy.

The programs and retail market design elements approved to implement the CES conform to the Commission's objectives of using free consumer choice as the first mechanism to achieve this goal, but balanced by regulatory action and government activities that will ensure such market animation by establishing firm and clear targets, reducing barriers to entry, supporting economies of scale, and establishing a mechanism to ensure that regardless of the pace of self-initiating consumer actions, New York consumers will be well positioned to meet the State's necessary climate goals in a fair and cost effective manner. The CES is an ambitious but necessary response to the challenges of climate change and modernizing the electric system. By this Order, the Commission further advances the achievement of the broad set of industry reforms under REV and adopts significant carbon reducing measures.

The CES, along with REV, will benefit New York energy consumers and the overall economy by encouraging new investments in the State, maintaining existing jobs, and attracting capital from outside the State. It reflects a comprehensive and balanced approach to the challenges of climate change and the opportunities presented by a transforming electric industry.

Customer Choice

Under REV, the Commission initiated regulatory and retail market reforms to ensure the regulated distribution utility companies, the competitive energy and distributed energy providers, and the complementary actions of the State energy entities, including the New York State Energy Research and Development Authority (NYSERDA), NYPA and LIPA, are linked through the uniform goal of promoting consumer choice through competition and innovation as the chief vehicles of integrating clean energy into the fabric of a two-way integrated, efficient,

reliable and resilient modern New York electric power industry.[8] The reforms being implemented in REV are designed to ensure that over time, all New York electric customers will have unfettered access to clean, efficient, reliable and resilient power. The REV policies are also looking to advance energy democracy by facilitating meaningful consumer choice so that regardless of income, location, or living structure, all consumers have the ability to choose the type of supply they want and how much they want to consume. Similarly, the SEP goals address concerns that affect all New Yorkers. The CES obligations to conform to a resource mix and the benefits they will bring should be shared by all energy consumers regardless of their energy supplier. While all suppliers are not subject to the Commission's jurisdiction, the Commission is looking to all suppliers, including NYPA, LIPA and all others, to participate by satisfying their requisite share of responsibility.

These energy policies are also reflecting the fact that New Yorkers are concerned about the natural environment and when they have the choice and financial opportunity, many New Yorkers will gladly choose the more environmentally benign resource.[9] Energy efficiency, voluntary green energy purchases, and other market responses to REV will contribute towards the SEP goals. The public in New York is increasingly asserting its desire and preference for clean energy solutions. The Commission is compelled to ensure that New Yorkers are able to reveal their preference for clean energy by first giving them full opportunity to choose solutions that meet their individual

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[8] Case 14-M-0101, Reforming the Energy Vision.

[9] For example, an April 2016 survey conducted by The Nature Conservancy indicated that a majority of New Yorkers in the survey were willing to pay higher costs for renewable electricity.

needs and advance the greater public interest. The CES must encourage individual customer choice that exceeds the State's objectives. Business and individual customers voluntarily choosing to become more energy efficient, and to deploy or buy economic clean energy resources are New York's most valuable asset towards achieving the SEP goals. Under well-designed products and regulatory structures, the value of those choices will only grow.

Jurisdiction and Markets

Under the system of federalism, governmental power is divided between the national or federal government and the governments of the states. The federally-designed wholesale markets operated by the New York Independent System Operator (NYISO) pursuant to tariffs approved by the Federal Energy Regulatory Commission (FERC) are by law fuel-neutral and do not value resources based upon their environmental attributes or their ability to offer a fuel diversity hedge. Public interest determinations of fuel type and resource adequacy are specifically reserved to the states. As the "laboratories of democracy,"[10] it is welcomed that many states are advancing the achievement of our Nation's clean energy objectives by demonstrating through retail electric power market innovation various mechanisms available to encourage clean energy. Today at least twenty-nine states, including New York, serve this public interest through resource portfolio standards. In recent years, many jurisdictions including California, Oregon, Hawaii, District of Columbia, Vermont, and Maine have adopted renewable goals consistent with New York's adoption of the CES.

[10] A concept described by U.S. Supreme Court Justice Louis Brandeis in New State Ice Co. v. Liebmann, 285 U.S. 262 (1932).

Therefore, while the CES places New York in a leadership position among states, it is not a fully unilateral action.

The mechanisms any state applies to best meet its clean energy goals are inextricably tied to the design of power markets in that state and their participation in federally regulated wholesale markets. In states with traditional fully-integrated utilities that are simultaneously responsible for the generation, distribution and retail sales functions, utilities bear the obligation directly to meet clean energy goals and fulfill them consistent with their obligation to serve. In California where the wholesale generation sector is competitive and supervised by the California ISO, but distribution and retail sales remain a utility function, clean energy obligations are met by the utilities by purchasing clean energy from independent generators for distribution and retail sale by the utility. Finally, in states which fully restructured and permit both wholesale and retail competition, clean energy standards have primarily been met through the development of REC markets that are reflective of the presence of competition and associated reluctance by retail suppliers to enter into supply purchase obligations that are incongruous with their short-term retail contracts. The obligation to meet clean energy goals falls on the individual retail commodity supplier that must either purchase sufficient RECs to cover its obligations or make a generally higher-priced Alternative Compliance Payment (ACP) to a central authority.

New York, a state that is fully restructured, has historically met its clean energy goals through a unique system that treated the compliance obligation as a delivery function of the distribution utility with RECs centrally-procured for the utilities by NYSERDA in long-term contracts intended to provide greater certainty to generators and corresponding lower REC

costs for consumers. Renewable resource generation facilities are long-lived capital assets that will only be financed and constructed if the investor building them can be assured of a reasonable opportunity to recover its costs. Generally, long-term contracts or other durable mechanisms are necessary to provide sufficient certainty for prospective investors to induce them to make the investment. By this Order, the Commission retains the benefit of New York's unique central procurement system while shifting the obligation for compliance from the distribution utility to the retail commodity supplier load serving entity (LSE), where it naturally belongs.

Cost Containment

The Commission must ensure that the actions it takes in pursuing the State's energy policy objectives rest soundly within its jurisdictional responsibilities. The existing electric system was designed at a time where the monopolistic regulatory structure reflected the domination of capital intensive long-lived assets, central station supply and the reality of inelastic demand. And while the structure of the industry including the asset base is changing, the Commission anticipates that the transformed modern electric system will continue to be capital intensive and long-lived. For that reason, markets and regulatory actions to promote markets must always be mindful of the need to retain and build investor confidence. The design of the CES is intended to retain and create investor confidence in this sector both for existing and new investors through the avoidance of actions that are abrupt, unfair and otherwise fail to provide sufficient clarity and certainty to offer investors sufficient confidence. As the economic regulator, the Commission deeply understands that investor confidence yields consumer benefits through encouraging

capital deployment, competition and lower overall financing expense.

Further, as the chief State agency with the experience and obligation of protecting consumer interests in an industry so affected with the broad public interest, the Commission is statutorily compelled to act in a manner that ensures that it is effective in ensuring that both during the transformation of the industry and in achieving the transformed industry that the energy sector in New York remains safe, cost-effective, reliable, resilient and protective of the natural environment. Cost containment and investor confidence will be achieved through a range of measures, including direct program elements (e.g., an alternative compliance mechanism), closely-related cost reduction programs such as aggressive pursuit of energy efficiency, and a deep transformation of the electric industry, which is needed to move beyond the inefficiencies of the traditional electric system and regulatory structure, as described in previous REV orders.

Program Elements

In this Order the Commission adopts a goal that 50% of electricity consumed in New York by 2030 will be generated from renewable sources. The Commission identifies numerous avenues for achieving the goal, including:

- Existing State-owned renewable attributes including NYPA hydropower as well as projects funded through the Renewable Portfolio Standard and NY-Sun;

- Aggressive pursuit of cost-effective energy efficiency, established through market initiatives and the Clean Energy Fund, with guidance from the Clean Energy Advisory Council;

- Consumer-initiated green energy purchases or investments, which will be encouraged through market-based incentives and a transparent certification program;

- A continued obligation and opportunity for utilities to ensure that low-income consumers have access to clean energy alternatives that help them reduce their energy burden and improve the environment;

- A program to maximize the value potential of offshore wind, designed and sponsored by NYSERDA in cooperation with the federal government, industry, and an inter-agency task force;

- Actions to reduce soft costs of development, including measures to reduce the cost and enhance the speed and predictability of interconnection and siting;

- Jurisdictional obligations on load serving entities to ensure the procurement of renewable credits generated in New York or delivered into New York;

- Jurisdictional maintenance obligations on distribution utilities to maintain the contributions of older, small, renewable facilities;

- Long Island Power Authority actions for its retail customers in concert with a broader range of REV initiatives;

- New York Power Authority actions for its retail customers in concert with a broader range of REV initiatives;

- Continued actions by the State and State entities as energy users to individually exceed the standard through their energy development and purchasing activities; and

- Continued participation and leadership in the Regional Green House Gas Initiative (RGGI) and support of universal complementary federal action under the Clean Power Plan.

Commission action on the CES will be comprised of this Order and subsequent implementation orders. This Order also enumerates implementation details to be proposed by Staff, subject to public comment, and to be considered and resolved by the Commission in the implementation phase. The CES is divided

into a Renewable Energy Standard (RES) and a Zero-Emissions Credit (ZEC) requirement.

Renewable Energy Standard

Tier 1 - New Renewable Resources

Tier 1 consists of an obligation imposed upon every LSE. LSEs comprise all entities serving retail load within a regulated utility territory. This includes investor-owned distribution utilities, energy service companies (ESCOs), Community Choice Aggregation programs (CCAs) not served by ESCOs, and jurisdictional municipal utilities. Retail customers self-supplying through the New York Independent System Operator will also be considered LSEs for this purpose.

In this Order, the Commission requires each New York LSE[11] to serve their retail customers by procuring new renewable resources, evidenced by the procurement of qualifying RECs, acquired in the following proportions of the total load served by the LSE for the years 2017 through 2021:

Year	Percentage of LSE Total Load
2017	0.6%
2018	1.1%
2019	2.0%
2020	3.4%
2021	4.8%

Over time through a triennial review process, the Commission will adopt incrementally larger percentages for the years 2022 through 2030, with sufficient lead time for the LSEs

[11] This discussion assumes participation by LIPA and NYPA customers. As described more fully below, the load forecasts used to set targets account for historic behind-the-meter generation and incremental annual energy efficiency achievements.

to incorporate the changes into their planning processes. As part of the implementation phase the Commission directs staff to develop a possible scenario for acquisitions up to 2030. The Commission recognizes that the actual procurement requirements will depend upon a number of exogenous market factors, and thus should only be taken as a potential guide, not a schedule. The periodic review and target setting will also take into account the balance of likely incremental supply with demand. Based on current forecasts of future loads, the above percentages will yield the following MWhs of output from new renewable resources:

Statewide Yield (MWhs)

Year	Distribution Utilities & ESCOs	LIPA	NYPA	Direct Customers	Statewide Total
2017	705,595	120,244	139,225	8,936	974,000
2018	1,261,429	214,967	248,900	15,975	1,741,270
2019	2,263,192	385,682	446,563	28,662	3,124,100
2020	3,841,197	654,599	757,928	48,647	5,302,371
2021	5,455,424	929,688	1,076,440	69,090	7,530,642

	Renewable Resource MWhs	Percentage Renewable Resources
Baseline	41,296,000	25.71%
2017	42,270,000	26.32%
2018	43,037,270	26.81%
2019	44,420,100	27.69%
2020	46,598,371	29.08%
2021	48,826,642	30.54%

The LSEs will be able to meet their obligations by purchasing RECs from NYSERDA, by purchasing qualified RECs from other sources, or by making Alternative Compliance Payments to NYSERDA. Resources eligible to produce RECs will be resources that came into operation after January 1, 2015, and that meet the eligibility criteria set forth in Appendix A.

This Order also provides for NYSERDA to conduct regularly scheduled solicitations for the long-term procurement of RECs to achieve the following anticipated and minimum results for the years 2017 through 2021:[12]

Year	Anticipated Procurement Target (MWh)	Minimum Procurement Target (MWh)*
2017	1,966,449	1,769,804
2018	2,022,004	1,819,804
2019	2,077,560	1,869,804
2020	2,133,116	1,919,804
2021	2,188,671	1,969,804

* Assumes a 10% attrition rate from the Anticipated Procurement Target

As noted above, the statewide procurement of new large-scale renewable generation expected to result from Tier 1 during the period 2017 to 2021 is 9,347,020 MWh, or approximately 1,869,400 MWh per year. This is over two times the level of large-scale renewable generation that was procured through Renewable Portfolio Standard (RPS) solicitations during the period 2011 to 2015, which averaged 788,600 MWh per year.

[12] This discussion also assumes participation by LIPA and NYPA customers.

NYSERDA will thus acquire, annually, sufficient RECs to meet the entire electric demand of approximately 240,859 homes.

Consistent with the policy established in the Clean Energy Fund, the cost of Tier 1 REC procurement will not result in new charges to delivery customers; all charges will be to commodity customers. If periodic review of REC procurement reveals that REC demand is not being supplied at reasonable prices, procurement methods and this objective will be reconsidered.

The Commission's further objective is to ensure that in its totality the CES achieves the goals of a reliable clean energy industry in a cost-effective manner. Measures to achieve this will include:

- The continued use of long tenure REC procurement;
- An Alternative Compliance Mechanism which will cap the potential cost of RECs on an annual basis;
- Banking of excess RECs for use in future years;
- Establishing markets for voluntary green products;[13] and
- Periodic review of the program to ensure best practices are followed, that balance is maintained between supply and demand, and to establish firm minimum targets.

Tier 2 - Maintenance Tier

At this time, there is no necessity for Tiers 2a and 2b as proposed in the Staff White Paper. The categories for REC support payments in Staff's proposal are either premature, unnecessary, or already provided for under the current maintenance program. For those resources such as small hydro that may retire without additional support for their

[13] LIPA and NYPA are also anticipated to develop such market opportunities.

environmental benefits, Tier 2 as adopted in this Order will consist of a maintenance program as existed under the RPS. Staff is directed to develop and recommend for Commission consideration as part of an implementation plan whether there should be changes to the maintenance program to align support with zero-emissions facilities. For resources that are currently under NYSERDA contracts but might export their power to another state at the end of the contract period and jeopardize achievement of the 2030 target, the Commission will monitor their activities and consider action at a later time if necessary.

Offshore Wind

Achieving a de-carbonized electric system for the long-term, with reliable generation and an economically sustainable capacity factor, will inevitably depend on a mixture of technologies and combinations that are not fully developed at this time. New York is fortunate to have substantial potential for offshore wind production and with appropriate time, careful planning and deliberate action, the State has the opportunity to exploit its geographic advantage to develop offshore wind and promote the beneficial attendant economic activity associated with this burgeoning industry. In order to maximize the potential for offshore wind, in addition to the actions taken in this Order, the Commission is requesting NYSERDA to identify the appropriate mechanisms the Commission and the State may wish to consider to achieve this objective. Through this additional work and the actions the Commission is promoting in this Order, a future is being enabled where older, less efficient plants in New York are replaced exclusively with clean energy resources, including higher capacity factor offshore wind and renewable/storage combinations.

Zero-Emissions Credit Requirement

Tier 3, the independent but related component of the CES concerns the State's nuclear facilities. New York's total electric generation mix in 2014 was 37% gas, 31% nuclear, 23.5% hydro, 4.5% coal, 3.5% wind, solar, biomass and biogas, 1.3% solid waste, and 0.4% oil. New York's upstate nuclear plants avoid the emission of over 15 million tons of carbon dioxide per year. Based on current market conditions, losing the carbon-free attributes of this generation before the development of new renewable resources between now and 2030, would undoubtedly result in significantly increased air emissions due to heavier reliance on existing fossil-fueled plants or the construction of new gas plants to replace the supplanted energy. The added emissions would complicate the State's compliance with likely federal carbon standards and would result in dangerously higher reliance on natural gas, radically reducing the State's fuel diversity. Such reduced fuel diversity could affect system reliability and price stability, making consumers more vulnerable to natural gas and concomitant electric price spikes. The loss would also have other significant adverse economic impacts on State energy consumers and the State as a whole. New York can look to another leader in renewable power – Germany – for a lesson in the unintended consequences of losing zero-emissions attributes from all its nuclear plants. Germany's abrupt closure of all its nuclear plants resulted in a large increase in the use of coal, causing total carbon emissions to rise despite an aggressive increase in solar generation.

The Order establishes a mechanism and a price for zero-emissions attributes of nuclear zero-carbon electric generating facilities where public necessity to encourage the continued creation of the attributes is demonstrated. NYSERDA will offer qualifying nuclear facilities a multi-year contract

for the purchase of ZECs. For facilities that demonstrate public necessity and are awarded contracts prior to April 1, 2017, the contract period will run from April 1, 2017 through March 31, 2029. The ZEC price for these contracts will be $17.48 per MWh for the first two-year tranche designated Tranche 1. The ZEC price would be adjusted every two years for Tranches 2 through 6 in accordance with the formula articulated in this Order, which is based on the social cost of carbon. Facilities subsequently demonstrating public necessity will be offered contracts at a ZEC price calculated by the formula established by this Order.

Each LSE that serves end-use customers in New York will be required, beginning April 1, 2017, for the benefit of the electric system, its customers and the environment, to purchase the percentage of ZECs purchased by NYSERDA in a year that represents the portion of the electric energy load served by the LSE in relation to the total electric energy load served by all such LSEs. LSEs will make ZEC purchases by contract with NYSERDA and will recover costs from ratepayers through commodity charges on customer bills.

The ZEC mechanism adopted in this Order is the best way for the State to preserve the nuclear units' environmental attributes while staying within the State's jurisdictional boundaries. ZECs provide a vehicle for monetizing the State's environmental preferences and the program will allow time for new clean energy technologies to mature and take their place in the ultimate generation mix. The independent renewable resource and ZEC obligations that together make up the CES each contribute uniquely to serving the long-term goal of achieving a largely de-carbonized energy system by the middle of the century.

II. PROCEDURAL BACKGROUND

This Order is a continuation of a series of Commission and State actions to increase the use of renewable electric generation and reduce the production of greenhouse gasses. In 2004, the Commission adopted a Renewable Portfolio Standard designed to achieve total renewable generation of 25% by 2013.[14] In 2008, the Commission adopted an Energy Efficiency Portfolio Standard (EEPS) designed to reduce total electricity consumption in the state 15% by 2015. Reduction of greenhouse gasses was one of the principal goals of the EEPS initiative.[15] Also in 2008, New York's Department of Environmental Conservation adopted a rule to establish the Regional Greenhouse Gas Initiative (RGGI). Through RGGI, New York, along with eight other Northeastern and Mid-Atlantic states, set a cap on total carbon dioxide emissions from electric generating facilities within the region.[16] In December 2009, the Commission expanded the RPS goal to 30% by 2015.[17]

On February 26, 2015, in its REV proceeding, the Commission directed a reassessment of New York's approach for encouraging the expansion of large scale renewable energy

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[14] Case 03-E-0188, Retail Renewable Portfolio Standard, Order Regarding Retail Renewable Portfolio Standard (issued September 24, 2004).

[15] Case 07-M-0548, Energy Efficiency Portfolio Standard, Order Establishing Energy Efficiency Portfolio Standard and Approving Programs (issued June 23, 2008), p. 2.

[16] 6 NYCRR Part 242, CO_2 Budget Trading Program; 21 NYCRR Part 507, CO_2 Allowance Auction Program.

[17] Case 03-E-0188, Retail Renewable Portfolio Standard, Order Establishing New RPS Goal and Resolving Main Tier Issues (issued January 8, 2010).

generation.[18] On June 1, 2015, the Secretary issued a notice instituting this proceeding, and Staff filed a Large Scale Renewable Energy Development in New York Options and Assessment (Options Paper) prepared by NYSERDA. Forty-eight comments were filed on the Options Paper and 14 replies.

As noted, on June 25, 2015, the State Energy Planning Board adopted the SEP. The SEP calls for 50% of New York's electricity to be generated by renewable sources by 2030, as part of a strategy to reduce statewide greenhouse gas emissions by 40% by 2030.[19] This goal exceeds the targets and caps established in the RPS and RGGI.[20]

The State Energy Law requires that agency actions must be reasonably consistent with the most recent State Energy Plan.[21] Further, on December 2, 2015, Governor Cuomo instructed the Department of Public Service (DPS) to begin implementing the State's goal of 50% renewable electricity by 2030.[22] On January 21, 2016, the Commission expanded the scope of this proceeding to implement the 50% renewables by 2030 goal, and maintenance of

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[18] Case 14-M-0101, Reforming the Energy Vision, Order Adopting Regulatory Policy Framework and Implementation Plan (issued February 26, 2015), p. 83.

[19] 2015 Energy Plan, Vol. I, p. 112.

[20] The State's climate change initiatives are paralleled by federal and international developments. On December 22, 2015, the U.S. Environmental Protection Agency adopted the Clean Power Plan which requires states to implement carbon emission reduction plans. On December 12, 2015, an international climate change accord was approved, including commitments from the United States.

[21] New York Energy Law §6-104(5)(b).

[22] Letter from Governor Andrew M. Cuomo to Audrey Zibelman, CEO, New York State Department of Public Service, December 2, 2105 (Cuomo Letter) available at https://www.governor.ny.gov/sites/governor.ny.gov/files/atoms/files/Renewable_Energy_Letter.pdf.

certain nuclear plants.[23] On the same date, the Commission adopted the social cost of carbon, less the RGGI value already internalized, as a component of externality values that could not otherwise be calculated.[24] The Commission further expanded the instant proceeding on February 24, 2016 to consider an expedited program to maintain the viability of certain nuclear power plants in order to maintain their zero-emissions characteristics.[25]

Staff filed its White Paper on January 25, 2016. One hundred and five comments were filed on the White Paper and 34 replies. On April 8, 2016, Staff filed a Cost Study regarding the White Paper (Cost Study or Study), and on April 12th a Supplement to the Cost Study. Twenty-six comments were filed on the Cost Study. On July 8, 2016, Staff's Responsive Proposal for Preserving Zero-Emissions Attributes (Staff's Responsive Proposal) was filed. Thirty-two comments were filed in response to that filing. A summary of comments on the White Paper, Cost Study, and Staff's Responsive Proposal is attached as Appendix B.

The written comment process has been supplemented by an extensive series of public hearings and technical conferences. Staff convened five on-the-record technical conferences with active participation from a range of diverse stakeholder perspectives. The technical conferences focused on various topics included in the White Paper and Cost Study in

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[23] Case 15-E-0302, Clean Energy Standard, Order Expanding Scope of Proceeding and Seeking Comments (issued January 21, 2016).

[24] Case 14-M-0101, Reforming the Energy Vision, Order Establishing the Benefit Cost Analysis Framework (issued January 21, 2016), p. 18.

[25] Case 15-E-0302, supra, Order Further Expanding Scope of Proceeding and Seeking Comments (issued February 24, 2016).

order to further discuss and investigate issues pertinent to development of the Clean Energy Standard.

Twenty-four public statement hearings where conducted across the state during the months of May and June to provide interested individuals and stakeholders the opportunity to comment on the Clean Energy Standard proposal. Over 3,500 comments have been submitted to the Commission's public comment website since the proceeding was expanded to consider the Clean Energy Standard proposal. In addition, at one of the public statement hearings, the Sierra Club presented 11,000 written public comments for inclusion into the record. Public comments have been overwhelmingly supportive of the CES initiative in general,[26] with commenters mixed on the inclusion of nuclear facilities, as described below.

A parallel process that will be affected by the implementation of the CES is the development of the State Resource Plan (SRP).[27] The Department of Public Service initiated the SRP in 2014 to determine bulk power system actions (e.g., procurement of additional regulation service, transmission) that will need to be taken to accommodate increased penetration of weather-variable resources in the supply mix. A base case will be evaluated to determine the potential electric resource needs for 2024 and 2030 under business-as-usual conditions. Then a policy scenario will be evaluated to determine the potential electric resource needs to

[26] The Nature Conservancy also conducted a survey of New Yorkers, as described in party comments, which indicated broad support for increased investment in renewable energy sources.

[27] The SRP working group consists of Staff, NYSERDA, the Department of Environmental Conservation, and the Utility Intervention Unit of the Department of State, the NYISO, and the major New York transmission owners.

meet the CES goal and federal requirements. SRP results will be taken into account in the ongoing review of the CES.

These proceedings have occurred against the backdrop of the overall REV initiative, which is the State's sweeping reform of the manner in which electricity will be generated, distributed, and consumed. REV intends to transform the century-old paradigm of a centralized, unidirectional utility system that is built to serve inelastic demand and be compensated through cost-of-service ratemaking. Under REV, system efficiency and customer value will be driven by markets and by new business and regulatory models that encourage the integration of distributed resources including generation, demand response, and energy efficiency.

III. NOTICE OF PROPOSED RULEMAKING

Pursuant to the State Administrative Procedure Act (SAPA) §202(1), Notices of Proposed Rulemaking regarding various aspects of the Commission's consideration of the CES were published on January 27, 2016 [SAPA No. 15-E-0302SP1]; March 16, 2016 [SAPA No. 15-E-0302SP2]; April 20, 2016 [SAPA Nos. 15-E-0302SP3 and 15-E-0302SP4] and May 25, 2016 [SAPA No. 16-E-0270SP1]). In addition, a Notice Soliciting Comments and Providing for a Technical Conference and Public Statement Hearings was issued January 26, 2016, establishing initial and reply comment periods, which were later extended.[28] A Notice of Comment Period for the Staff White Paper and Cost Study was issued April 8, 2016. On July 8, 2016, a Notice Soliciting Additional Comments was issued regarding Staff's Responsive

[28] See Case 15-E-0302, et al., supra, Notice Extending Comment Period (issued March 8, 2016); Notice Extending Reply Comment Period (issued April 29, 2016); Notice Extending Deadline for Comments (issued July 15, 20).

Proposal for Preserving Zero-Emissions Attributes. Final comments in these proceedings were due July 22, 2016.[29] As noted above and discussed below, numerous comments were received from parties and the general public and have been relied upon to inform this decision.

IV. STAFF PROPOSALS, COST STUDY, AND PARTY COMMENTS

A. Renewable Standard: Obligation of Participating Entities

1. Staff Proposal

a. Jurisdictional Entities.

Staff proposes specific goals for MWh of renewable energy for 2017-2020, with subsequent goals to be established in triennial reviews. Achievement of the goals would be the responsibility of all LSEs serving retail load in the territory of electric distribution companies (EDCs). LSEs are defined as investor-owned utilities (in their capacity as commodity suppliers), jurisdictional municipal utilities, and all competitive ESCOs. Each LSE would be responsible for supplying a defined percentage of retail load with supply derived from eligible resources during each calendar year (Compliance Year).

Staff explains that this approach is already used by other Northeastern states with restructured retail markets. It has the advantage of placing compliance costs primarily in the generation supply charges, which sends the most direct price signal and reduces the need for charges on the delivery bill. The LSE obligation would also promote REV objectives by encouraging ESCOs to develop innovative products to increase customer options and reduce customer costs.

The CES obligation for each LSE would be determined by multiplying its MWh load obligation by the renewable percentage

[29] Case 15-E-0302, et al., supra, Notice Extending Comment Deadline (issued July 15, 2016).

CES target for that year. Each LSE would be required to meet its obligation for each tier within each Compliance Year.[30]

A number of large institutions and customers take power directly from the NYISO. These end-use, direct NYISO customers are LSEs in their own right and are subject to the CES obligation.

b. Non-Jurisdictional Entities.

Staff states that NYPA and LIPA are expected to adopt renewable and non-emitting energy targets that are proportional to their load. This includes municipal utilities and rural cooperatives that obtain their full requirements from NYPA. The CES obligation of jurisdictional entities would be calculated under the assumption that NYPA and LIPA are adopting their proportional shares of the statewide goals.

2. Party Comments

Parties overwhelmingly support the basic goals of the CES initiative. Along with environmental advocates and clean energy industries, utilities and most consumer and citizen groups recognize the need for the CES. With few exceptions, party comments relate to how, not whether, to implement the 50 by 30 goal.[31] The LSE mandate as a foundational approach to CES implementation is generally supported, although most of the discussion is framed in terms of the need for and approach to long-term contracts, described below. The Clean Energy Organization Collaborative (CEOC) and Environmental Defense Fund (EDF) support the LSE mandate in particular, because it would

[30] Staff's proposal regarding tiers is discussed below.

[31] The Business Council questions whether the CES goal can be achieved without damaging the state's economy. The Green Education and Legal Fund argue that the 50 by 30 goal is inadequate to address the urgency of climate change and a 100% goal should be adopted.

hold market participants directly accountable, and it would reflect compliance costs in energy commodity charges.

Three EDCs filing jointly as "the Companies"[32] describe the potential for CES to overlap with other forms of payments for renewables including non-wires-alternative projects, net metering, and voluntary green products. The Companies emphasize the importance of coordinating so that customers do not pay more than once for the same benefit. The Companies also urge that the CES obligation apply to self-generating microgrids. EDF notes that self-generating fossil units not connected to the grid would not be encompassed within the CES mandate, and that distributed generation must be measured with precision in order not to encourage either polluting generation that escapes the mandate or clean generation that is not properly credited. Three utility EDCs filing as the Indicated Joint Utilities (IJU)[33] argue that projects receiving net metering should transfer any REC value they receive to the host utility in order to avoid an excess payment.

The Natural Gas Supply Association (NGSA) proposes a fundamentally different approach to carbon reduction that recognizes environmental advantages of gas. The General Electric Company (GE) also argues that carbon benefits of natural gas should be accounted for. The Entergy entities (Entergy) also oppose the renewables approach to the CES and argue that a source-neutral carbon-intensity standard is the most effective was to reduce carbon emissions.

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[32] The Companies are New York State Electric & Gas Corporation (NYSEG), Rochester Gas and Electric Corporation (RG&E) and Central Hudson Gas & Electric Corporation (Central Hudson).

[33] The Indicated Joint Utilities are Consolidated Edison, Orange and Rockland, and Niagara Mohawk d/b/a National Grid.

The Business Council does not oppose the CES but the Business Council as well as the Manufacturing Association of Central New York (MACNY) oppose applying the REC obligation to sales to business customers. Multiple Intervenors (MI) and the New York Farm Bureau also express concern about impacts on energy costs. MI questions whether the 50 by 30 goal should be assumed to be a reasonable starting point.

The Retail Energy Supply Association (RESA) has strong concerns over the LSE mandate, citing fixed price contracts with customers and long-term supply contracts that have been entered into without anticipating the additional costs of the LSE mandate. NYPA and the New York State Economic Development Council (NYSEDC) express concern over the potential impact on NYPA's economic development customers. MI and Nucor Steel Auburn, Inc. (Nucor) also argue that application of the LSE mandate to energy intensive large customers would be counter-productive. NYPA states that it will work aggressively to implement its share of the 50 by 30 goal, but that its contracts do not provide it with flexibility to pass through costs. NYPA also states that sales to storage facilities should not be considered retail sales for purposes of triggering an LSE obligation to purchase RECs.

The New York Association of Public Power (NYAPP) and the New York Municipal Power Agency (NYMPA) argue that the CES mandate should not apply to municipal and cooperative utilities. The New York Battery Storage Technology Consortium (NYBEST) supported the CES but proposes that RECs should be supplemented by Flexible Energy Credits (FLECs) with a separate mandate for LSEs to acquire FLECs in addition to RECs; Alliance for a Green Economy (AGREE) supports this proposal.

In response to Staff's request for comments on how to avoid unintended consequences for beneficial electric end-use

technologies (BETs) such as geothermal heat pumps and electric vehicles, the NY Geothermal Energy Organization (NY GEO) proposes two options: the first option is to not count increased load from BETs against the LSE requirement; the second option is to establish Thermal Renewable Energy Certificates (TRECs). A TREC would be generated for every three units of geothermal heat paired with one unit of electricity. TRECs are under consideration in several states.

B. Eligible Resources

1. Staff Proposal

Staff proposes a list of eligible renewable resources that tracks the list under the current RPS, with an exception that would eliminate the 30 MW limit on low-impact run-of-river facilities and allow for larger run-of-river facilities. The requirement of no new storage impoundments will remain both for upgrades and, by definition, for run-of-river facilities.

Out-of-state generation would be eligible if it is located in a control area adjacent to the NYISO control area, and if the generation is accompanied by documentation of a contract path between the generator and the in-state purchaser that includes transmission rights. Staff notes that inclusion of these resources will help to reduce overall costs, and will also avoid any legal concerns related to interstate commerce.

Staff recognizes that some market activities can have the effect of reducing carbon while increasing electric demand (e.g., electric vehicles and geothermal heat pumps). This creates a concern that the CES obligation, based on total demand for electricity, could create a disincentive to the development of these beneficial uses.

2. Party Comments

Parties offer a wide range of comments on eligibility. Many comments submitted by representatives of industries argue

for the eligibility of their particular products, including waste-to-energy, biomass, biogas, and hydroelectricity. The Department of Environmental Conservation (DEC) observes that there are significant differences among various types of biomass and biogas generation. AGREE and the Citizens Environmental Coalition (CEC) are opposed to many forms of biomass and biogas eligibility. Vanguard Renewables seeks to clarify that the principle difference is between biomass and biogas. The Cow Power Coalition and Cornell University agree that biogas generation from anaerobic digestion should be considered renewable. The Energy Recovery Council (ERC) argues that waste-to-energy should be considered an eligible resource.

Hydro Quebec Energy Services U.S. (HQ) argues that there should be no limits on large scale hydropower, while a coalition of Renewable Energy Industries (REI)[34] along with the Sierra Club opposed any inclusion of large scale hydropower. The Low Impact Hydropower Institute (LIHI) suggests that its criteria for low-impact hydropower should be used to determine eligibility. The NYISO and RESA agree that out-of-state generation should be eligible. The Canadian Wind Energy Association (CanWEA) propose that hydropower eligibility should be broadened and that transmission projects to deliver wind and hydro should be solicited as part of the CES. The Independent Power Producers of New York (IPPNY) oppose any out-of-state generation owned by a government entity. HQ states that it is government-owned but that it receives no subsidies.

[34] REI is a coalition of renewable industry representatives. The members of REI do not encompass the entire renewable industry. Further references to REI in this Order are made in recognition that REI is a functional coalition of industries with common interests but does not represent all renewable interests.

GE supports the inclusion of combined heat and power (CHP) as well as supply efficiencies that reduce the amount of fuel needed for fossil generation. NY BEST argues that storage should be an eligible technology; AGREE and CEC support this. AGREE and Otego Microgrid Ratepayers agree with NY GEO that beneficial electric end uses should be eligible for some form of benefit to at least ensure that no disincentives for these technologies are created by the REC requirement.

C. Tiers

1. Staff Proposal

Staff describes that many states with RPS and CES programs utilize tiers that distinguish among eligible resources based on factors including vintage and technology, to promote both growth of new resources and maintenance of existing ones. For purposes of administrative simplicity, a small number of broad tiers is preferable; this also encourages competition among technologies within a tier. For purposes of minimizing compliance costs, tiers may need to distinguish among resources due to differing degrees of needed support. Co-incentives may also be used to target specific technologies within a tier, either because they have a specific public policy value or to improve the competitive balance within the tier.

Staff's proposal includes a single tier for new renewable resources, and a second tier for existing generation that is subdivided in sub-tiers to minimize compliance costs. A third tier is proposed to maintain existing eligible nuclear facilities.

Tier 1 would include all new resources with an in-service date on or after January 1, 2015. The categories of eligible generation sources generally mirror the current Main Tier of the RPS program. Co-incentives such as NY Sun would balance the competitive opportunities within the tier.

Tier 2 would include existing resources to support their continued contribution to meeting New York goals. Because the cost structures and alternative revenue opportunities of these resources vary significantly, Staff recommends further differentiation.

Tier 2a would be the competitive sub-tier intended to provide sufficient revenue to attract renewable attribute supply for which New York must compete with other states. Tier 2a would include merchant projects not currently receiving state support, expired RPS Main Tier contracts, and outputs from current RPS projects that exceed the contracted amounts.

Tier 2b would be the non-competitive sub-tier intended to provide sufficient revenue to maintain existing renewables that are not eligible to participate in growth tiers of other states. All existing resources that are not eligible under Tier 2a would automatically be included in Tier 2b.

Tier 3 is proposed for nuclear facilities, as discussed below. Tier 3 resources do not produce RECs for purposes of the LSE REC obligation.

2. Party Comments

Many parties including Town of Brookhaven, CEOC, Citizens for Local Power (CLP), Green Education and Legal Fund, REI, Otsego 2000 and Pepacton Institute (Pepacton), Deepwater Wind, and Dong Energy, urge a separate tier for offshore wind. These parties argue that offshore wind will be essential in meeting renewable goals and a separate tier would enable financing and accelerated development.

The City of New York (NYC or the City) strongly supports the CES initiative but expresses concern over geographic equity stemming from the fact that downstate consumers would have to pay for renewable generation that would have upstate economic benefits. According to the City, one

option to address this would be a downstate sub-tier of Tier 1, with costs socialized across the state in the same manner as the White Paper describes. The NYC notes that carbon emissions are often associated with other more local emissions, and the CES should provide an opportunity to reduce local emissions in the concentrated downstate area.

NYC also observes that the multi-tier purchase requirement could discourage customers who choose to voluntarily purchase 100% of their supply from new renewables, if those customers must also purchase a share of RECs and ZECs from Tiers 2 and 3. IJU also emphasizes that voluntary renewable purchases in excess of the LSE requirement must be encouraged, not discouraged, by the CES structure.

The IJU proposes that a separate Tier 4 should be established for large hydropower supply, so that environmental attributes can be considered along with the cost structure of large hydropower. GE proposes a separate tier for new emerging technologies, to encourage development of innovative technology solutions.

Numerous parties representing specific industries comment on the manner in which the tier structure would affect their product offerings. Brookfield Renewables (Brookfield) argues that existing hydropower should be eligible under Tier 1 as it is in some other states, and that Tier 2 will require midpoint reviews. Brookfield also argues that Tiers 2a and 2b should be merged into a single tier that provides appropriate compensation to retain all existing renewable resources.

Ampersand Hydro states that most small hydropower facilities would fall into Tier 2b and suggested a Social Benefits Adder of four cents per kWh for these facilities. HQ proposes that hydropower delivered over existing transmission lines should be included in Tier 2, with hydro delivered over

new transmission lines treated as incremental under Tier 1. The National Fuel Cell Research Center (NFCRC) describes the benefits of distributed power for meeting CES and REV objectives and proposes that 35% of the CES obligation should be set aside for distributed generation. The NY Cow Power Coalition advocates a separate tier for anaerobic digester generation, which would enable the aggregation of dairy-farm generated power within a utility service territory. The New York Solar Energy Industries Association (NYSEIA) supports the proposed tiered structure, but urges that a sub-tier for solar be established within Tier 1 for the growth of utility-scale solar.

D. Annual Targets

1. Defining the Baseline

a. Staff Proposal

Staff describes its method of calculating the CES baseline in Appendix B of the White Paper. The NYISO load forecast for 2025 was extrapolated to 2030 assuming linear continuation from 2024-2025 through 2030.[35] This forecast was supplemented with an assumption of 8,615,000 MWh of additional load by 2030 from electric vehicles and geothermal heat pumps, and 410,000 MWh of behind-the-meter generation. From this subtotal, incremental annual energy efficiency achievements of 2,227,000 Mwh were subtracted.[36] The resulting total of statewide need for 2030 is 150,017,000 MWh.

The 50% renewable goal, expressed in MWh, for the CES was obtained by dividing the total anticipated load by two, resulting in approximately 75,000,000 MWh in 2030. In 2014,

[35] The White Paper mistakenly describes the period 2023-2025 as the basis for extrapolation.

[36] The energy efficiency estimates are based on recently approved targets, increased pro rata to include NYPA, LIPA, and direct NYISO customers.

41,296,000 MWh, or approximately 26% of the fuel mix, was supplied from renewable sources. Subtracting this from the 50% goal resulted in a need for 33,700,000 MWh of additional renewable generation in 2030.

b. Party Comments

MI notes that the baseline calculation contains several assumptions that will need to be revisited periodically, including the load forecast, energy efficiency savings, and electric vehicle load. The Companies state that resources to be counted toward the baseline should be registered through the New York Generation Attribute Tracking System (NYGATS) (see below).

EDF, MI and IPPNY note that if CES targets are not coordinated with corresponding reductions in RGGI allowance caps, then reductions in New York will simply free up allowances for use elsewhere in the RGGI market, resulting in no actual reductions in greenhouse gas emissions on a regional level. Otsego 2000 argues that the RGGI caps and 25 MW threshold must be reduced.

NYSEIA argues that the baseline resources are such an important part of the overall goal that they should be tracked through a separate Tier 0, with no corresponding LSE obligation. CEOC argues that the amount of energy efficiency assumed in the baseline is far lower than is practically achievable, and submitted a study which claims that more than twice as much efficiency could be economically achieved, with corresponding reduction in the cost to achieve the CES. Energy Efficiency for All argues that the energy efficiency estimate in the baseline should be established through a clear mandate.

2. Establishing Tier Targets

a. Staff Proposal

Recognizing the many variables and forecasting difficulties beyond 2020, Staff proposes that fixed annual

targets be set for each tier through 2020, with targets for the next three years established well in advance of the end of 2020, and subsequent targets established through similar triennial reviews. Staff notes that this approach allows the achievement trajectory to be responsive to market developments, with specific targets established in time to avoid uncertainty.

Staff proposes targets for specific tiers, with the existing resources in Tier 2 remaining relatively stable while the annual percentage of new renewables increases each year. Progressive targets for the initial years of Tier 1 reflect estimates of projects being developed under the RPS and NY Sun programs.

b. Party Comments

The Companies and MI support the establishment of fixed targets through 2020 with a triennial review to fix targets beyond that date. The Department of State Utility Intervention Unit (UIU) supports the use of triennial reviews to establish targets.

Numerous parties including REI, EDF, GE, Green Education and Legal Fund, NFCRC, NYC, and NYSEIA argue that firm targets should be set for each year through 2030 in order to provide a predictable signal to the market. The Green Education and Legal Fund argues that a 100% renewables portfolio by 2030 should be the target. REI states that triennial reviews could be used to adjust targets if necessary. REI and EDP Renewables argue that the targets should be front-loaded in order to take advantage of federal tax credits before they expire. CEC and CEOC agree that targets should not be backloaded.

3. Start Date for Targets

a. Staff Proposal

Staff proposes that the first Compliance Year be 2017, for all tiers.

b. Party Comments

MI argues that the initial target should be set for 2018 rather than 2017, which would provide time for the necessary markets and associated infrastructure to be developed. REI opposes this suggestion, arguing that an additional year would create a gap in large-scale renewables procurements.

E. Compliance Mechanism

1. Renewable Energy Credits

a. Staff Proposal

Staff proposes that the principal medium of compliance would be the REC. One REC would be created for each renewable MWh generated. This is the universal unit of measure that allows RECs to be marketed within and among states. The REC method would make New York's CES system compatible across multiple systems, policies, and markets. Each LSE can self-supply, trade, and purchase RECs through short-term or long-term instruments. LSEs would demonstrate through annual compliance filings that they possess sufficient RECs to meet their obligations.

b. Party Comments

Most parties support the use of RECs as the medium of compliance, although support for RECs is qualified by a wide variety of positions as to the details of implementation. As noted above, several parties oppose the approach to renewables and supported a source-neutral carbon intensity standard. The National Energy Marketers Association (NEMA) stresses that the compliance system adopted for the CES should be clear and consistent. NEMA recommends that the Massachusetts model be followed.

MI voices the strongest concerns over the use of RECs. MI cites Staff's acknowledgement that interstate REC markets could result in generation owners pursuing the highest revenues

across state lines. MI argues that New York has been developing renewables under its RPS without having to resort to marketable RECs, and that this may be the mechanism that results in the lowest costs to ratepayers.

2. Alternative Compliance Payments

a. Staff Proposal

Staff proposes that LSEs have the option of complying with their REC obligation by making Alternative Compliance Payments. ACPs are widely used in other competitive market states. They provide flexibility and an effective cost cap. An ACP is not a penalty for non-compliance; it is a discretionary alternative mode of compliance. ACP levels would be established by the Commission based on forecasted REC prices, system needs, and other relevant factors.

Because ACPs do not represent actual renewable MWh, Staff proposes that the proceeds of ACPs be directed to reducing the costs of in-state renewable development toward meeting the 50 by 30 goal.

b. Party Comments

Most parties agree that some form of ACP is needed both to provide a price cap on RECs and to provide an alternative procurement method for smaller LSEs. Parties disagree over the method for setting ACP levels and over the disposition of ACP proceeds.

CEOC states that ACPs should only be used during scarcity conditions to guard against price spikes. Direct Energy Services suggests that ACPs start at a low level and gradually increase; this would allow time to adjust for LSEs with fixed price commodity contracts. REI and NYSEIA propose that ACPs should be set substantially higher than the estimated REC price in order to stimulate development. NRG, Energy, Inc. (NRG) states that ACPs must be set as high as other states to

avoid export. SEIA (Solar Energy Industries Association), Vote Solar, CEOC and EDF suggest that best practices identified from other states with REC markets should be used. Nucor and MI express the concern that ACPs can tend to establish a floor as well as a ceiling on REC prices. Nucor argues that ACP pricing should be tied to the value of the externality benefit.

The Companies and IJU agree with Nucor and MI that the ACP will have the effect of a price floor, to the point where the administratively determined ACP will act as a substitute for market forces. The Companies argue that central procurement through a competitive process would eliminate the need for an ACP and avoid this problem.

Parties broadly agree that ACP proceeds should not be used to support government functions but should instead be used to promote achievement of the CES. Parties have varying approaches to this goal. Several parties favor a broader approach that would use the funds to promote renewables development, comparable to the use of RGGI proceeds. Others including NYC, MI and UIU argue that proceeds should be refunded directly to customers. NYC argue that if ACP proceeds are refunded, while still holding LSEs as a whole to meeting the CES targets, then cost-effective compliance will be promoted. UIU, AGREE, and PosiGen Solar Solutions propose that ACP proceeds be targeted to low-income customer energy efficiency or CES compliance.

3. Banking and Borrowing

a. Staff Proposal

Additional flexibility and cost control can be achieved through banking of excess RECs and borrowing against shortfalls. These devices can help to smooth fluctuations in REC supply, and allow hedging against future price increases. Staff does not recommend any specific time limits on banking and

borrowing but notes that banking is typically subject to a time limit of two to three years and the amount bankable is limited to a percentage of individual LSE obligation such as 30%. The typical period for borrowing is much shorter, for example one or two calendar quarters, to ensure that compliance obligations are not inappropriately avoided.

b. Party Comments

Parties generally support banking and borrowing in the context of the LSE REC obligation. GE proposes that a force majeure provision be added to provide additional flexibility in the event of natural disasters.

F. Long-Term Contracting for RES Resources

1. Staff Proposal

Staff explains that one challenge of the LSE obligation approach is that financing of renewable facilities will often require long-term contracts, and LSEs in competitive markets do not have the certainty of long-term load commitments that would support their entering long-term purchase contracts for renewables.

Staff describes the risks faced by renewable project developers in a competitive market. Demand risk – i.e., the risk that there will be a market for the product – is addressed by the establishment of the CES mandate. Significant risks remain, however. As technology prices fall, project owners will need to compete against new entrants with lower costs. Also, if energy prices fall below forecasted levels, anticipated project revenues will not materialize. In a REC-only market, these risks will likely be passed along to consumers in increased REC costs. The Cost Study also indicates that a REC-only approach to long-term procurement is likely to result in higher REC costs by 2023 than an approach based on bundled PPAs.

In response to this challenge, Staff discusses a number of options related to long-term contracting. Staff draws heavily on the June 2015 Options Report and party comments that followed it.

Long-term contracts backed by EDCs provide near-term benefits for CES compliance, but they carry risks for utility ratepayers if energy costs or technology costs decline below forecasted levels. Also, the near-term benefits of utility-backed contracts must be balanced with the long-term benefits of self-initiated markets. Staff also considers the potential for utility-owned generation and recommends that there was no basis to deviate from the policy direction adopted in the REV Framework Order that generally prohibits utility ownership of generation resources, in order to promote entry by market participants.

Staff proposes that EDCs be required to purchase some portion of the REC target through long-term PPAs that provide for RECs, energy and/or capacity. EDCs should further be allowed to resell to third parties for shorter terms, and to keep an appropriate portion of the profits from those transactions as an incentive.

Staff also proposes that NYSERDA should serve as a central procurement entity for RECs. NYSERDA has long experience in this role, and the cost advantages of central procurement are described in the Options Report. Although NYSERDA's role will be intermediary, some assurance against financial risk will be needed; Staff proposes that EDCs serve as financial guarantors of NYSERDA's procurements.

2. Party Comments

Parties are split over the use of PPAs and over the potential for utility-owned generation facilities (UOGs) in the context of the CES. The Indicated Joint Utilities and the

Companies oppose PPAs backed by EDCs, arguing that this places risk onto utility customers in the event that energy prices or technology prices decline. Consumer Power Advocates (CPA)and Nucor agree with the utilities that PPAs would represent an inappropriate imposition of risk onto customers, citing past experience with PURPA[37] contracts and contracts pursuant to PSL Section 66-c.

As an alternative, the IJU proposes a portfolio approach comprised of continued NYSERDA procurement of REC-only contracts, self-initiated market activity, and a "universal renewables" model in which EDCs would take ownership of projects built by independent developers. IJU argues that where there is uncertainty as to the best approach, a portfolio of approaches is prudent.

IJU submitted studies indicating that UOGs would be substantially less costly than PPAs, mainly because of lower utility finance costs and because UOGs would retain the residual value of facilities beyond the limited term of PPAs.

IPPNY opposes PPAs on the grounds that the contracts would insulate projects from competitive market pressures. The NYISO states that PPAs could endanger the efficient operation of markets.

Most clean energy developers and advocates are strongly in favor of the PPA approach. REI advocates that at least 85% of new renewables be procured through PPAs. REI and CEOC argues that any risk posed by PPAs is offset by hedging value in the event that prices rise above forecasted levels. REI further argues that the current proposal differs greatly from the older PURPA and 66-c situation because PPAs would be subject to competitive processes under the CES. REI also argues

[37] Public Utility Regulatory Policy Act of 1978, 16 U.S.C. §§ 2601, et seq.

that it was inconsistent for the IJU to advocate a portfolio approach while excluding PPAs from the portfolio.[38]

NFCRC and Bloom Energy are not opposed to PPAs but caution that they should not crowd out the potential for distributed generation to meet CSE obligations. EDF also urges the Commission to consider the objective of a highly distributed system when deciding on procurement options.

IPPNY opposes allowing utility-owned generation, arguing that UOGs would overturn decades of policy that favors competitive markets in which risk is undertaken by market participants and not by ratepayers. IPPNY argues that EDCs' ability to recover all costs in rates would provide an incentive to bid low and then pass cost overruns through to ratepayers.[39]

CPA supports the IJU proposal, arguing that EDCs could be held accountable for pursuing the least-cost options, and that they could only exert market power by withholding production which would be very difficult to do. EDF argues that more analysis is needed of the procurement options before the Commission commits to any one course of action. CEOC states that it would support further process to consider UOGs but only as a complement to a primary reliance on PPAs.

The Companies state that if the Commission decides to adopt a PPA approach, then NYPA should be the financial backer of the PPAs, instead of EDCs. CEOC also supports an approach where NYPA provides financial support for PPAs.

Central procurement through NYSERDA is supported from parties on both sides of the PPA/UOG division. The Companies argue that central procurement through NYSERDA should be the

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[38] Other parties supporting the use of PPAs included AGREE, Brookfield, NYSEIA, NRG, SEIA/VoteSolar, and MI.

[39] Other parties opposed to UOGs included REI, Deepwater Wind, Citizens for Local Power, EDP Renewables, NYSEIA, and NRD.

only source for RECs, and that LSEs should not be allowed to bypass the NYSERDA process by self-supplying or procuring from other sources.

Energy Infrastructure Advocates (EIA) propose a process in which a central procurement entity (e.g., NYSERDA) obtains contracts through competitive bidding and PPAs are undertaken by a central supply aggregator (e.g., NYPA). EIA states that multiple pathways should be pursued for procurement.

G. Nuclear Facilities

1. Staff Proposal

In its initial proposal, Staff described how conditions in wholesale power markets, particularly low natural gas prices, have benefited consumers but have impaired the financial viability of upstate nuclear plants, to the point where plant owners have announced the intention to close plants that are otherwise fully licensed and operational. The closure of upstate nuclear plants would have a tremendous negative impact on the State's ability to meet the greenhouse gas reduction goal in the State Energy Plan. It would result in an increase of CO_2 emissions of more than 15.5 million tons per year.

Accordingly, in the White Paper, Staff proposed a Nuclear Tier (Tier 3) to ensure the proper valuation of carbon-free power from nuclear plants. Tier 3 would entail a separate obligation for LSEs to purchase ZECs. ZECs would not be eligible to demonstrate compliance with the REC obligation. In other words, the carbon-free generation represented by ZECs is in addition to the 50% renewable generation that will be represented by RECs. Staff described Tier 3 as a bridge to a renewable future, to avoid backsliding in the State's efforts to reduce carbon emissions, and to assist the transition from nuclear to non-nuclear resources if wholesale prices remain too

low to support the existing nuclear plants during their license lives.

As there are too few owners of the affected nuclear generation facilities to create sufficient competition to determine an accurate price to be paid for ZECs, the price of ZECs would be administratively determined by the Commission. Staff originally proposed that the price be based on a review of the anticipated operating costs of the plants and anticipated wholesale prices of energy. This would result in a fair price for the environmental attribute of each facility. However, upon further consideration and in response to party comments, Staff modified its proposal, filing Staff's Responsive Proposal, described below.

2. Party Comments

A wide spectrum of comments were submitted on Staff's initial proposal, ranging from strongly held views for and against nuclear power in general, to technical points regarding the ways that a ZEC program would operate in the context of the CES mandate.

A number of parties were opposed to any support for nuclear facilities, arguing that nuclear power is not safe, clean, or carbon-free.[40] Another group of parties were strongly supportive of ZECs, for the reasons expressed by Staff but also

[40] These parties include AGREE, Council on Intelligent Energy & Conservation Policy, Promoting Health and Sustainable Energy, Indian Point Safe Energy Coalition (IPSEC), Susan Shapiro, Green Education and Legal Fund, NY Climate Action Group, and CEC. Public comments supporting this position were also filed by Assemblywoman Barbara Lifton, Assemblywoman Ellen Jaffee, the Dutchess County Legislature, the Rockland County Legislature, the Suffolk County Legislature, and the Ulster County Legislature.

because of the economic impacts of the upstate nuclear plants.[41] The strongly opposed and strongly supportive views were each represented by large numbers of participants in public statement hearings and contributors to the Commission's public comment page.

Most of the party comments on Staff's initial nuclear proposal did not fall simply into a "Yes" or "No" formula. A majority of the active parties either supported the proposal with conditions, or were neutral with concerns.

Both of the nuclear plant owners, Entergy and Constellation Energy Nuclear Group (CENG) argued that a fuel-neutral carbon standard would be a preferable approach rather than Staff's initial proposal which took financial need into account. CENG did not oppose the mechanism proposed by Staff, however, and emphasized the urgent need for action based on the refueling cycles of individual plants and the imminence of closure decisions. CENG also urged that 12-year contracts would be needed in order to provide assurance and suggested that a backstop pricing mechanism tied to the social cost of carbon be adopted to be available in the event that Staff's original proposal was found preempted under federal law.

Entergy opposed Staff's initial proposal because it was restricted to plants that are fully licensed and would thereby exclude the Indian Point facilities. Entergy argued

[41] Comments supporting this view were filed by Assemblyman William Barclay, Assemblyman Robert Oakes, Senator Rich Funke, Senator Joseph Robach, Senator Pattie Ritchie, Boilermakers Local Lodge No. 5, Business Council, City of Oswego, Greater Oswego-Fulton Chamber of Commerce, IBEW Local 43, IBEW Local 1-2, Utility Workers Union of America Local 1-2, Laborers' International Union of North America Local 633, Onondaga County Legislature, Oswego County Legislature, Operation Oswego County, Plumbers and Pipefitters Local 112, Plumbers and Steamfitters Local 73, Town of Scriba, Upstate Energy Jobs, MACNY, and New York State Utility Labor Council.

that this distinction was arbitrary, discriminatory, not rationally based, and preempted by federal law. NYC argued that the Indian Point facilities reduce total carbon, are important to reliability, and provide economic support to the community. IPPNY and the New York Affordable Reliable Electricity Alliance also argued that the Indian Point plants should be included in the ZEC mandate.

IJU supported Staff's proposal but stated that the future of nuclear plants and their treatment in wholesale markets is a national issue that will eventually need to be addressed at the national level. The Companies supported the proposal, stating that procurement of ZECs should be centralized and allocated to all LSEs.

AGREE and GELF argued that Staff did not support its assumption that maintaining nuclear facilities was a necessary component of an overall strategy to reduce greenhouse gasses. In opposition to that view, the Nuclear Energy Institute observed that the closure of only the Ginna plant (R.E. Ginna Nuclear Power Plant) would undo all of the carbon reductions obtained through the RPS program to date.

Many parties representing environmental and clean energy interests argued that any support for nuclear power must be completely separate from a Clean Energy Standard. REI, CLP, CEOC, and EDF argued that nuclear subsidies should in no event divert support for renewable generation, and ideally should be established (if at all) in an entirely separate program.

Several parties expressed concern over the way that financial need would be determined. MI stated that Staff had not supported its assumptions of financial need. Both MI and Nucor argued that any proceeding to determine a level of support should be open, as it would be comparable to a utility rate proceeding to determine the cost of service to be supported by

ratepayers. MI also argued that, because nuclear facilities are allowed to earn unregulated levels of profits while energy prices are high, any support provided to nuclear facilities to maintain them in the short-term should be subject to a clawback – i.e., return to ratepayers – when the plants return to profitability.

Otsego 2000 supported Staff's proposal but only if it is found to be the most cost-effective way to reduce greenhouse gasses. Otego Microgrid Ratepayers support the Staff approach but only if it is not open-ended and if there is a clear plan to work toward eventual closure of nuclear plants.

AGREE, in the context of strong opposition to the proposal, argued that it is not clear what value the ZEC payments would be capturing – carbon, reliability, or economic. AGREE and other parties stated that the plants have been determined not to be necessary for reliability.

NYC, CLP, and AGREE stated that a ZEC mandate should not be imposed on LSEs that offer 100% renewable energy. They argued that customers should have the option of voluntarily buying 100% green power that does not include nuclear.

3. Staff's Responsive Proposal

After considering the comments submitted in response to the White Paper and Cost Study, Staff refined its recommendations pertaining to the proposed methodology for encouraging the preservation of the environmental attributes of zero-emissions nuclear power electric generating facilities. Staff's Responsive Proposal recommends valuing and paying for the zero-emissions attributes based on a formula that begins with published estimates of the social cost of carbon.

Specifically, Staff proposes that payments for zero-emissions attributes would be based upon the U.S. Interagency Working Group's (USIWG) projected social cost of carbon (SCC).

Such payments would be provided where there is a public necessity to encourage the preservation of a facility's zero-emissions environmental values or attributes for the benefit of the electric system, its customers and the environment. Staff proposes that public necessity be determined on a plant-specific basis at the discretion of the Commission, upon considerations of the following factors: (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-emissions 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.

Upon a determination of facility-specific public necessity, the owner of the zero-emissions generating facility would be offered a multi-year contract administered by NYSERDA to purchase ZECs from the period beginning on the first day of the two-year tranche for which that facility was found eligible, through March 31, 2029. The facility will have an obligation to produce the ZECs and to sell them to NYSERDA for the duration of the contract, except during periods when the calculated ZEC price pursuant to the contract is $0. This contractual obligation would be enforced by appropriate financial consequences for failure to produce.

For the contract period of Tranche 1, Staff proposes that the price of the ZEC would be 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 RGGI program based upon the average of the April 2017 through March 2019 forecast RGGI prices embedded in the Congestion Assessment and Resource Integration Study (CARIS) Phase 1 report (nominal $10.41/short ton). Staff's 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. For the contract periods of Tranche 2 through Tranche 6, the ZEC prices would be calculated pursuant to a formula, as follows: upstate ZEC Price = Social Cost of Carbon (average for each Tranche) - Baseline RGGI Effect (fixed at $10.41/short ton) – Amount by which sum of Zone A Forecast Energy Price and ROS Forecast Capacity Price exceeds $39/MWh. The 39/MWh reference price is used to measure the change in independent forecasts over time, it is not used to establish a quantity of energy or capacity revenues.

The amount of ZECs to be purchased annually would be based on actual output but will be capped at a MWh amount that represents the verifiable historic contribution the facility has made to the clean energy resource mix consumed by retail consumers in New York State, as specified in the NYSERDA contract.

Through contracts with NYSERDA, each LSE (including NYPA and LIPA) would be required to purchase an amount of ZECs per year of the total amount of ZECs purchased by NYSERDA in proportion to the electric energy load served by the LSE in relation to the total electric energy load served by all load serving entities in the New York Control Area. The price charged by NYSERDA per ZEC would be the price established administratively by the Commission for the purchase of zero-

emissions attributes, plus NYSERDA's incremental administrative costs and fees associated with the ZEC program and ZEC revenues.

The contracts between NYSERDA and the LSEs would be based on initial forecasts of load and utilize a balancing reconciliation at the end of each program year such that each LSE would have purchased the correct proportion of ZECs on an annual basis. Staff proposes that ZECs not be tradable except between NYSERDA and the LSEs in this balancing process. Finally, Staff suggests that the Commission entertain proposals by LSEs and perhaps self-supply customers to alternatively meet their ZECs obligations by entering into combined energy and/or capacity and ZEC contracts with the nuclear facilities if such contracts are structured in a way as to not unfairly shift ZECs costs onto other ratepayers.

4. Party Comments to Responsive Proposal

Comments related to Staff's Responsive Proposal represent a broad range of topics and viewpoints. Both comments supporting and those opposing the proposal cite environmental and economic reasons to support or oppose the proposal. Many comments opposing the proposal claim the review process was too truncated for such a long-lived program.

A vast number of comments from individuals members of the public were submitted either opposing or supporting Staff's Responsive Proposal. A large number of State and local officials submitted comments. Support for the proposal among public officials is strong but not universal. Those opposing the proposal state that nuclear power is not renewable and is detrimental to the environment. They argue that the State would be better off investing in renewable energy.

State and local officials expressing support for Staff's proposal state that Staff's Responsive Proposal is a reasonable approach to maintaining emission levels and an

overall benefit for the environment. They also note the positives related to the local and regional economy.

Similarly, comments among environmental groups are divided. A number of environmental advocates oppose supporting nuclear, particularly for the 12 years Staff proposes. Citizens' Environmental Coalition (the Coalition) opposes the Responsive Proposal claiming that no environmental impact analysis or alternative analysis was performed. The Coalition, as well as other parties, also suggests that investing in renewable energy solutions would be more cost-effective. AGREE also argues that nuclear generation is dirty and dangerous and laments that the proceeding is no longer singularly focused on supporting large-scale renewable energy.

Many parties generally support the program as a means of limiting greenhouse gas emission until higher penetration of renewable generation is achieved including Pace Energy and Climate Center (Pace) and Californians for Green Nuclear Power. Environmental Progress supports the program arguing that nuclear power must play a central role in the effort to combat climate change and that closure of the upstate plants will result in increased emissions. It claims that New York's power sector emissions, per-capita, are 25% of the national average in part, because nuclear power generated 57% of the State's zero-emissions power last year.

Supporting comments also point toward the benefits of fuel diversity and protection against price volatility. The Indicated Joint Utilities expressed support for Staff's Responsive Proposal because the proposed program will ensure the continuance of the environmental benefits of the plants' emission attributes that is not being captured by existing markets.

Many commenters including Pace and the Indicated Joint Utilities support Staff's incorporation of the SCC into the ZEC price calculation as a step toward properly internalizing the true cost of carbon emissions including Pace and the Institute of Policy Integrity at New York University School of Law.

The American Petroleum Institute (API) and MI both question the use of the SCC because they argue, it has not been properly vetted or demonstrated to accurately reflect cost savings related to avoiding carbon emissions. MI further questions adjusting the SCC for inflation when future estimates of the SCC increase over time.

Public Utility Law Project (PULP) believes that the proposal does not properly consider the social costs of nuclear storage, radiation leaks, decommissioning and other attendant costs.

CENG supports basing the ZEC on SCC but notes that it likely undervalues the nuclear facilities environmental attributes because it does not account for other air pollutants avoided. CENG also notes that tying the ZEC price to the cost of carbon leaves the nuclear generators exposed to operating and market risks.

Many comments raised issues or concerns related to the cost of the ZEC program. However, many comments also indicate that the costs seemed reasonable.

Upstate Energy Jobs supports the program, and along with others, believes that the costs associated with the program are outweighed by the benefits including avoiding energy and economic costs related to the facilities shutting down. Similarly, many public officials and community leaders support Staff's proposal as a cost effective means of limiting emissions and transitioning to the 50% by 2030 goal.

AGREE claims that Staff's Responsive Proposal amounts to the largest gift of public funds to a single corporation in the State's history. Nucor also expresses concern regarding subsidizing the sale of FitzPatrick (James A. FitzPatrick Nuclear Generating Facility) arguing that New York rate payers should not need to provide financial support for transactions between private parties.

Many commenters argued that any program designed to value emission attributes would be more cost efficient and fair if it was technology neutral including Potomac Economics and API. Similarly, AGREE objects to the fact that even lower cost resources would be prevented from competing with nuclear facilities. The Institute of Policy Integrity argues that inconsistent valuation methods for emission attributes (market versus administratively set) across generation types could lead to a situation where consumers are paying more for ZECs than RECs resulting in an unfair advantage for nuclear generation. Ampersand Hydro, LLC and others argue that the program contradicts the rest of the CES proposal as well as the REV framework. CENG notes that the proposed ZEC price is well below subsidies for renewable energy including the average subsidy paid by NYSERDA and the federal production tax credit.

The NGSA opposes Staff's proposal, stating that the Commission should allow market forces to establish a path for carbon reduction. NGSA argues for preserving competitive market signals through: implementation flexibility; fuel and technology neutral incentives; and fostering the regional market.

MI raised cost concerns specific to high-load-factor customers which it states are disproportionately impacted by the CES costs. MI states that any economic benefits relied on to support the program must be weighed against the negative

economic impacts of higher-cost electricity – particularly the economic impacts on high-load customers.

New York City opposes the program because it feels that it will impose costs on downstate consumers who are unable to receive its direct benefits. The City argues that due to geography and system constraints that it is unlikely that the electricity or the economic benefits expected from the program will be enjoyed downstate. The City argues that costs associated with the program should be allocated to follow the benefits.

Individuals and groups located downstate submitted comments supporting the program including ArtsWestchester and New York City Hispanic Chamber of Commerce. National Grid argues that the beneficiaries are statewide and encourages inclusion of NYPA and LIPA in the ZEC program.

PULP challenges the Responsive Proposal over concerns that it will have a disproportionate impact on low-income and fixed-income customers. PULP argues that further analysis must be done to measure the impact of the program on the State's goal of a 6% energy burden for low-income customers.

NEMA argues that the support for emission free generation outside of the wholesale market is likely to disrupt markets and result in high cost to consumers because it would be outside the NYISO's least cost dispatch model.

The NYISO evaluated Staff's proposal pursuant to its market monitoring and mitigation obligations and concludes that Staff's proposal does not raise wholesale market power concerns. The Indicated Joint Utilities agree that the ZEC price must be administratively set because of the limited number of suppliers and the potential for market power issues to arise.

Some commenters challenge specifics contained in Staff's proposed formula for setting the ZEC price. MI

challenges the use of a 3% discount rate, suggesting a 5% rate would be more appropriate and less expensive. MI, the Indicated Joint Utilities and others argue that RGGI values should not be held constant. MI argues that RGGI could have a much higher impact if RGGI total allowances are reduced, as is being contemplated. The Indicated Joint Utilities argue that RGGI prices should follow the CARIS model to increase over time.

The Indicated Joint Utilities further argue that the emission factor should be updated in future tranches (to calculate how much carbon is avoided per MWh), to reflect changes in the resource mix. Some commenters suggested that the contract between NYSERDA and the nuclear generators should include performance factors to hold the generators accountable for performance.

NEMA raised concerns about the impact of the ZEC mandate on ESCOs expressing concern that ESCOs may not recover the cost of compliance. Specifically, NEMA requests that the Commission clarify that ESCOs can recover ZEC compliance costs from customers under "regulatory change," "change in law" or similar contract provisions without violating any disclosure requirements.

Nucor states that it supports continued operation of the upstate nuclear facilities but only at a reasonable cost, which it claims cannot be assured through Staff's Responsive Proposal. Nucor claims that its own analysis indicates that the proposal would overpay Constellation by overstating costs and unnecessarily including all upstate nuclear facilities.

Nucor and MI both believe that before any nuclear plant be eligible for subsidies they must demonstrate that they would otherwise deactivate the facility. Other parties, including New York City question whether and to what extent nuclear plants have demonstrated a need for any subsidy.

Nucor also suggests limiting ZEC contracts to three-years (with reapplication allowed) as another means of limiting program costs. National Grid believes that 12 years is too long because of the need to transition away from nuclear and into renewables. National Grid also argues that the best long-term solution is reforming the markets in order to properly internalize the cost of carbon.

Nucor points out that Exelon has disclosed to the investment community that through forward power sales from its existing New York units, it has largely hedged the prices that Constellation expects to realize at levels that are considerably higher that the near-term forward price indices. According to Nucor, Exelon has stated that it expects these forward sales to produce $105 million in additional gross margin which NUCOR points out is not captured in Staff's Responsive Proposal.

New York City raises concerns regarding customers choosing to purchase renewable power over and above any mandate arguing that cost imposed related to ZECs will limit the monies available to support renewables. Many commenters echoed the comments from the City of Kingston which points out that because the mandate will be allocated across all retail customers, it becomes impossible for customers to pay only for renewable energy and be 100% renewable.

A number of commenters are dissatisfied with the time frame in which the Commission is acting on the ZEC program generally and Staff's Responsive Proposal. The New York Public Interest Research Group, Reinvent Albany and Common Cause New York as well as others submitted comments requesting more time to review the proposal. AGREE filed comments expressing concern that Staff's Responsive Proposal introduces new concepts, new obligations for utilities and new costs and that it reaches conclusions related to eligibility for specific units without

the required analysis. MI also raises concerns that Staff's Responsive Proposal has not been fully evaluated.

Other comments urged the Commission to act swiftly to ensure the economic and environmental benefits associated with keeping the plants operational.

Many commenters raised concerns relating to timing and the interactions between Case 16-E-0270 related to specific generation facilities and 15-E-0320 addressing support for environmental attributes of nuclear energy more broadly. Nucor and MI both argued that the Commission should refrain from responding to the petition until it has responded to Staff's Responsive Proposal.

Some parties claim that Staff's Responsive Proposal lacks the necessary detail or analysis to be fully evaluated. AGREE and MI raise a concern regarding the apparent lack of analysis regarding the cost and benefits of nuclear generation in comparison to other emission free resources. MI points to additional concerns including details regarding what would constitute an appropriate financial consequence for a nuclear facility's failure to produce ZECs. AGREE further points out that one factor for considering a public necessity determination is the cost and benefits of such a subsidy in relation to other clean energy alternatives but claims that no such analysis is available to support Staff's recommendation.

NEMA claims that the process violates the State Administrative Procedures Act because it failed to provide adequate notice or a meaningful opportunity to comment on the Responsive Proposal. NEMA further claims that Staff's Responsive Proposal is the same type of regulatory action invalidated by the Court in Hughes v Talen Energy Marketing,

LLC.[42] Similarly, NSGA cautions that the ZEC proposal intrudes on FERC jurisdiction.

New York City states that the proposal lacks a discussion of the Commission's statutory authority to mandate that load serving entities enter into contracts with NYSERDA to purchase ZEC's and that the City is unaware of any such authority. PULP similarly states that the legal underpinnings are not sufficiently developed.

Ampersand Hydro raises the concern that if other non-emitting resources do not receive similar or greater value for their attributes, it would amount to an unconstitutional taking of the property of those facilities.

NYAPP argues that the Commission should exempt municipal and cooperative utilities from the ZEC requirement. NYAPP points out that as a group, 86% of NYAPP power comes from NYPA's Niagara Project, and through utilization of this low-cost renewable source, the group demonstrates a meaningful contribution to the State's renewable goals even absent mandatory requirements.

LIPA Staff submitted comments stating that it intends to seek the approval of its Board of Trustees to enter into the necessary agreements to procure its appropriate share of zero-emissions credits and to receive its appropriate share of such revenues as co-owner of the Nine Mile Point 2 Nuclear Station. Similarly, NYPA states that it fully intends to comply with the Staff Proposal, subject to any directive from its Board of Trustees following finalization of the initiative. MI and others state that NYPA customers should not pay any ZEC cost, as they have the ability to leave the State and go where there is no subsidy for the nuclear plants. They state that NYPA rates

[42] Hughes v Talen Energy Mktg., LLC, 136 S. Ct. 1288, 1292 (2016).

are for economic development, and such rates have not traditionally been charged for similar subsidies

H. Cost Study and Cost Management

1. Summary of the Cost Study

The Cost Study makes detailed projections to 2023. Beyond 2023, the combination of variables makes detailed projections less reliable.

Critical findings of the Cost Study are total bill impacts to customers of less than 1% under the base case scenario, with net benefits of $1.8 billion taking into account $3.1 billion in carbon savings.

Assumptions in the base case scenario through 2023 include:

- a 50/50 split between long-term PPAs and annual REC procurements;
- carbon values established by the Environmental Protection Agency and adopted in the Commission's Benefit Cost Analysis framework;
- a calculation that netted the gross program costs – i.e., the additional payments above energy and capacity that will be required to make projects viable – against the societal value of avoided carbon dioxide emissions;
- inclusion of Tier 3 nuclear costs and benefits;[43]
- no costs or benefits of grid integration beyond costs borne by project developers;
- no offshore wind by 2023; and

[43] The study noted several indirect benefits of maintaining nuclear plants that were not included in the calculations. These are 28,800 jobs, $3.16 billion in direct or secondary GDP, and $144 million in State tax revenues.

- no distributed resources beyond the existing NY Sun goals.

The Study includes sensitivity analyses across major variables including procurement method, total power usage, and energy prices. The difference between 100% long-term procurement through PPAs and 100% reliance on RECs is estimated to be over $1.4 billion by 2023. The Study does not include a utility-owned generation option, but it notes that UOG has the potential to reduce costs below those of PPAs.

The Study considers a high energy usage scenario of 22,000 additional GWh (which could be caused by numerous factors). The gross cost of compliance doubles under the high usage scenario.

High and low energy price scenarios, applied to the base case, result in a difference of 0.65% in bill impacts directly tied to the CES. The context of this sensitivity is very important. Lower energy prices increase the relative cost of CES compliance, but those higher CES premiums are paid in a context of lower overall energy bills. Conversely, higher energy prices reduce the relative cost of CES premiums but in the context of higher overall bills. The conclusion of the Study is that, while fluctuations in energy prices will have a strong effect on the gross cost of CES compliance, they will have a moderating effect on relative bill impacts of the CES.

The Study also notes that the value of PPAs is likely to increase in the years following 2023, as energy prices rise and the size of the required CES premium is reduced relative to new procurements.

Federal tax credits have a substantial impact on program costs. The base case assumes the currently scheduled phase out of credits. The Study also considers potential

changes in interest rates and technology costs and found that they have a relatively minor impact on costs.

Although the Study does not incorporate any estimated benefits from REV, it notes that an increase in economically responsive demand measures could have a substantial beneficial effect on total CES compliance costs, and will establish conditions to increase renewable procurement on an economic basis.

2. Party Comments

Comments on the Cost Study vary widely, with some parties arguing that important benefits have not been considered, while others argue that important costs have been omitted. CEOC and REI comment that the Study demonstrates overall net benefits and minimal bill impacts, and REI notes that the bill impacts were consistent with a comprehensive study of other states' renewable programs conducted in 2014 by the National Renewable Energy Laboratory (NREL).

Numerous parties comment that the Study was lacking in detail and transparency, to the point that it was not adequate to support a full decision on the issues.[44] A subset of these parties (Business Council, MI, and IPPNY) argue that due to uncertainty in the Cost Study the Commission should refrain from imposing any mandate at this time. NYC argues that the Commission should refrain from committing to a single procurement strategy. Other parties argue that uncertainty is best addressed through mandates, for example, that due to the sensitivity of overall costs to various load growth scenarios, the Commission should mandate energy efficiency targets. The Labor Coalition argues that the uncertainty of Tier 1 estimates reinforces the need to rely on nuclear facilities to achieve

[44] These parties include AGREE, Brookfield, Business Council, NYC, IPPNY, IJU, MI, and Nucor.

carbon goals. IJU agrees with limiting the mandate and schedule to 2023 due to the difficulty of estimating beyond that point.

The cost assumptions in the Study produce a wide range of comments. Many parties emphasize that there is little treatment of the potential costs of transmission upgrades.[45] MI and the Business Council argue that impacts on Installed Reserve Margins are also ignored; the API argues that the need for backup gas-fired capacity is not analyzed. IPPNY, IJU, and MI state that the energy price forecasts used in the Study may be too high, which has the result of lowering forecasts of net costs from the CES. MI notes that the subsidies provided to renewables coming on line in the 2017-2019 period are not factored into the analysis although the carbon benefits of those projects are included. NYC argues that the bill impact estimate covers the CES but not the nuclear mandate. AGREE argues that the estimated costs of nuclear support are understated. Nucor and Pepacton note that administrative costs of procurement are not identified.

Parties also note potential benefits, and cost-mitigating factors, that are not included in the Study. NYC, IJU, CEOC, and REI argue that other environmental benefits such as reductions in criteria pollutants should be counted. IJU objects to the absence of an analysis of utility-owned generation, and submitted a study concluding that a utility-owned generation option could reduce costs by 21% compared with PPAs. By contrast, several parties argue that PPAs are the most cost-effective procurement approach. REI argues that the potential for technology cost reductions is understated. Brookfield and LIHI argue that carbon benefits of Tier 2b procurements should have been counted, and that low-impact hydro

[45] These parties included IPPNY, NYC, the Business Council, Entergy, IJU, MI, and Nucor.

benefits are understated. Several parties argue that biogas can have a much more cost-beneficial role than is estimated in the Study. AGREE argues that the costs of replacing nuclear facilities with additional renewables has not been analyzed but that this could reduce the overall cost of the program. Pepacton notes that the benefits of distributed resources are not fully incorporated into the Study.

Several parties identify comparisons that are not made in the Study. NYC and Nucor argue that the cost of more energy efficiency should have been compared with the cost of renewables to achieve the State's goals. API states that the macroeconomic effects of CES should have been compared with alternative ways of achieving the goals. IPPNY states that the macroeconomic effect of plant retirements should have been accounted for. MI questions the basic premise of the netting of monetary costs against carbon benefits, noting that the monetary costs will be carried by New Yorkers while the benefits are global.

V. ESTABLISHING THE CLEAN ENERGY STANDARD

A. General Description

The Clean Energy Standard adopted here begins with adoption of the State Energy Plan goal that 50% of New York's electricity is to be generated by renewable sources by 2030, as part of a strategy to reduce statewide greenhouse gas emissions by 40% by 2030. To implement that goal, the CES is further comprised of a series of deliberate and mandatory actions to enhance opportunities for customer choice necessary to achieve the SEP goal. The mandated actions are divided into two categories, a Renewable Energy Standard and a Zero-Emissions Credit requirement. The RES consists of a Tier 1 obligation on LSEs to invest in new renewable generation resources to serve their retail customers; a Tier 2 obligation on distribution

utilities on behalf of all retail customers to continue to invest in the maintenance of existing at-risk generation attributes; and a program to maximize the value potential of new offshore wind resources. The ZEC requirement consists of a Tier 3 obligation on LSEs to invest in the preservation of existing at-risk nuclear zero-emissions attributes to serve their retail customers. The RES component and the ZEC component are interrelated but the goals are additive; that is, the carbon benefits of preserving the nuclear zero-emissions attributes will not count toward achieving the required number of renewable resources to satisfy the 50% by 2030 goal. The RES and ZEC components will however, in combination, contribute toward the State's comprehensive greenhouse gas reduction goals.

B. Legal Authority

The Commission's authority derives primarily from the New York Public Service Law (PSL), through which numerous legislative powers are delegated to the Commission. Pursuant to PSL §5(1), the jurisdiction, supervision, powers and duties of the Commission extends to the manufacture, conveying, transportation, sale or distribution of electricity. PSL §5(2) requires the Commission to encourage all persons and corporations subject to its jurisdiction to formulate and carry out long-range programs, individually or cooperatively, for the performance of their public service responsibilities with economy, efficiency, and care for the public safety, the preservation of environmental values and the conservation of natural resources. PSL §66(2) provides that the Commission shall examine or investigate the methods employed by persons, corporations and municipalities in manufacturing, distributing and supplying electricity and have power to order such reasonable improvements as will best promote the public interest, preserve the public health and protect those using

such gas or electricity. PSL §4(1) also expressly provides the Commission with all powers necessary or proper to enable [the Commission] to carry out the purposes of the PSL including, without limitation, a guarantee to the public of safe and adequate service at just and reasonable rates,[46] environmental stewardship, and the conservation of resources.[47]

In addition to the PSL, the New York Energy Law §6-104(5)(b) requires that "[a]ny energy-related action or decision of a state agency, board, commission or authority shall be reasonably consistent with the forecasts and the policies and long-range energy planning objectives and strategies contained in the plan, including its most recent update." The program established here is consistent with the renewable and clean energy targets established in the 2015 New York State Energy Plan, as well as the underlying principles elucidated in the Plan.[48] Therefore under State law, the Commission's authority to direct a comprehensive CES program is quite clear.

Federal law preempts contrary state law pursuant to the Supremacy Clause of the U.S. Constitution. Under the Federal Power Act, the FERC has exclusive authority to regulate the sale of electric energy at wholesale in interstate commerce.

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[46] See International R. Co. v Public Service Com., 264 AD 506, 510 (1942).

[47] PSL §5(2); see also, Consolidated Edison Co. v Public Service Commission, 47 NY2d 94 (1979)(overturned on other grounds) (describing the broad delegation of authority to the Commission and the Legislature's unqualified recognition of the importance of environmental stewardship and resource conservation in amending the PSL to include §5).

[48] See 2015 New York State Energy Plan available at http://energyplan.ny.gov/Plans/2015.aspx (setting a target of 50% renewable consumption by 2030 and describing "guiding principles" including "Market Transformation"; "Community Engagement"; "Private Sector Investment"; "Innovation and Technology;" and "Customer Value and Choice."

States retain the power to regulate the retail sale of electricity to end-use consumers. All Commission actions must take place within the "cooperative federalism"[49] structure of energy regulation and the myriad state and federal court cases each shedding its own light on the jurisdictional boundaries. FERC has previously said that REC programs, purchasing "attributes," are for a commodity created by states that is not within the wholesale sale of electricity jurisdiction of FERC. Recent U.S. Supreme Court cases also make it clear that all retail sales of electricity, as well as "any other sale" not considered a wholesale transaction, are under State Commission authority.[50] The directives to LSEs and distribution utilities under consideration in these proceedings are only related to retail sales of electricity and carbon-free energy generation attributes (RECs and ZECs), Commission jurisdiction over which is well established and settled.[51]

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[49] See FERC v Elec. Power Supply Assn, 136 S. Ct. 760 (2016); The Federal Power Act (June 10, 1920, ch. 285, pt. III, § 321, formerly § 320, as added Aug. 26, 1935, ch. 687, title II, § 213, 49 Stat. 863; renumbered Pub. L. 95-617, title II, § 212, Nov. 9, 1978, 92 Stat. 3148).

[50] Hughes v Talen Energy Mktg., LLC., 136 S. Ct. 1288, 1292 (2016) and FERC v Elec. Power Supply Assn, 136 S. Ct. 760, 766 (2016)(explaining that the Federal Power Act places any sale of electricity other than those at wholesale beyond the jurisdiction of the Federal Energy Regulatory Commission).

[51] Hughes v. Talen Energy Mktg., LLC, 136 S. Ct. 1288, 1291 [2016]; see also WSPP, Inc., 139 F.E.R.C. 61,061 (2012)(explaining the REC transactions unbundled with wholesale energy and capacity are beyond FERC's jurisdiction); and Morgantown Energy Associates, 139 F.E.R.C. 61,066 (2012) (recognizing that RECs are state-created and are a separate product from energy and capacity); American Ref-Fuel Company, 105 F.E.R.C. 61,004 (2003)(explaining that RECs are a state law creation and not within FERC's jurisdiction).

"Wholesale" sales include "energy" and "capacity" sales among other types of wholesale sales. Federal Law gives FERC the responsibility to ensure that prices charged in wholesale sales are just and reasonable. In deregulated markets like New York, wholesale transactions typically occur through two mechanisms: bilateral contracts and auctions. For bilateral contracts between generators and LSEs, FERC may review the rate in the contract for reasonableness, although FERC generally presumes that rates established by good-faith arm's-length negotiation are reasonable. FERC may abrogate an otherwise valid bilateral contract if it harms the public interest, or it may apply buyer-side mitigation in the marketplace to counteract what it perceives to be the negative effects of the contract. Auctions in New York are conducted by the NYISO pursuant to a FERC-approved tariff. The clearing price if based on a reasonably competitive auction is generally accepted by FERC as being the basis for a just and reasonable rate. Once FERC sets wholesale rates, a state may not conclude in setting retail rates that FERC-approved wholesale rates are unreasonable. A state must give effect to Congress' desire to give FERC plenary authority over interstate wholesale rates, and FERC and the courts will ensure that the states do not interfere with this authority. States may not seek to achieve ends, however legitimate, through regulatory means that intrude on FERC's authority over interstate wholesale rates. States may encourage production of new or clean generation through measures "untethered" to a generator's wholesale market participation.[52]

C. Cost Study and Cost Mitigation

The Cost Study demonstrates that CES targets through 2023 can be achieved with net societal benefits and modest bill

[52] See Hughes, supra 136 S. Ct. 1288, 1299 (2016).

impacts, taking into account critical known facts, projected trends, and sensitivities around major variables. The comments of parties, both supportive and challenging of the Cost Study conclusions, illustrate that there are numerous detailed factors that will unfold during the implementation of the CES.[53] Parties who argue that the Cost Study is incomplete unless it has integrated all of the factors they enumerate miss the basic function of the Study in the context of the CES. The purpose of the Clean Energy Standard is to transform the electric system. It is not an isolated, discretionary spending program. The CES implements State policy decisions that are made necessary in part, and urgent, by a global problem that challenges traditional administrative and jurisdictional approaches.

Consideration of the Cost Study is driven by the dual statutory charges of providing for just and reasonable rates and achieving reasonable consistency with the State Energy Plan. In this context, the chief purpose of the Cost Study is to estimate a range of cost and bill impacts, to inform the determination whether the CES is likely to achieve its goals within a reasonable range of estimated bill impacts.

To accomplish this purpose, the Study used best estimates of critical cost and benefits elements and applied sensitivity analyses across several important variables. To avoid overreaching beyond what can be foreseen with a reasonable degree of confidence, the Study limited its scope to the period concluding at the end of 2023. The findings of the Study demonstrate both a reasonable range of bill impacts and a net

[53] Some of the parties' objections are factually incorrect. For example, an estimate for the cost of transmission upgrades is reflected in the Study at page 256. Also, the Study counts neither the costs nor the benefits of Tier 1 2017-2019 installations (pg. 284), as support for those projects is already approved.

societal benefit. By its nature, transformative change cannot rest on precise long-range forecasts of the very matters that are undergoing transformation. Several parties argued that the consequence of uncertainty should be inaction. It is certain, though, that the consequences of inaction on air pollution and climate change are not acceptable.

MI observed that the costs of renewable purchases will be borne locally, while the benefits of carbon reduction will be dispersed globally. Conversely, CEOC and others argued that other environmental benefits should have been counted. The treatment of externalities was subject to comment and was determined in the adoption of the Benefit Cost Analysis framework.[54] A narrow view of costs and benefits might limit environmental benefits to those experienced solely within New York. In the case of climate change, such an approach could lead to inaction not only in New York but in all other jurisdictions.

MI's point is important, however, in illustrating both the value for combined action and the need for leadership. The State Energy Plan determined that New York take its place among the leaders in this effort. Under the CES, New York's goals are comparable to those of California and Oregon. Of the 29 states that have adopted renewable portfolio standards, several more either have adopted or are considering increased goals.[55] The CES strikes a reasonable balance between the lowest common denominator of inaction, which is unacceptable, and aggressive unilateral action with its attendant economic risks.

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[54] Case 14-M-0101, supra, Order Establishing the Benefit Cost Analysis Framework, January 21, 2016, pg. 17.

[55] See, e.g., Cal S.B. 350 (adopted February 14, 2015); Oregon S.B. 1547 (2016); Hawaii H.B. 623 (2015); Vermont H.B. 40 (2015).

On a similar note, several parties argued that the efficacy of New York's CES will be limited unless RGGI caps are also reduced. The setting of RGGI caps is a multi-state endeavor that also must be coordinated with plans to comply with the federal Clean Power Plan. Monitoring of this effort and its impact on RES targets, will be a subject for periodic review. Uncertainty around the future direction of RGGI further illustrates the importance of leadership shown by New York.

In adopting the CES, the Commission is implementing policy as developed by the statutory State Energy Plan process and in furtherance of the Commission's responsibilities pursuant to the PSL. The Cost Study is an essential way to inform the Commission's decision, and it demonstrates that the balanced approach of the CES as adopted is within a reasonable range of potential impacts.

A second important purpose of the Cost Study is to inform the development of the CES by identifying controllable variables that can be used to mitigate potential costs. The CES framework adopted here contains several mitigation measures, including continued aggressive pursuit of energy efficiency through various proceedings; the Alternative Compliance Payment option; adjustment of targets via triennial review to optimize targets in response to market developments; interim review as a safeguard against divergences; the banking of RECs; the consideration of the contributions of voluntary market activity; and Distributed Energy Resource integration via the REV initiative, so that load management and system balancing can improve the economic value of weather-variable generation. A related purpose is the identification of factors which, although not controllable, influence cost and should be considered. Examples include federal tax credits, interest rates, etc.

In a late filing, the NYISO stated that substantial transmission upgrades may be needed to move power from traditional generation centers to load centers. The NYISO also stated that a large increase in reserve margins will be needed to account for weather-variable generation. The NYISO further stated that it intends to develop long-term market mechanisms to retain nuclear generation.

The Commission agrees with the NYISO to the extent its comments are suggesting that the Commission must consider the reliability impacts of a change in the resource mix. Ensuring both the reliability and efficiency of the power system is one of the Commission's chief responsibilities. Under REV, the design and operations of the distribution grid will be modernized to take advantage of information and technology innovations that enhance value to consumers. The positive effects of these changes are already materializing. While the NYISO is a public entity regulated by FERC, as a significant participant in the State's power system, New York consumers need a NYISO that possesses the knowledge and skill sets to match the sophistication and transformation being made in the power system to ensure that consumer needs for a reliable power system are met in as an efficient way as possible. The Commission is confident that the NYISO is up for these challenges and will look forward to its continued cooperation.

The Public Service Law requires the Commission to ensure that utilities provide safe and adequate service. In carrying out its responsibilities, the Commission cannot and will not compromise the safety and reliability of New York State's electric system, both at the bulk system and distribution levels. For this reason, two years ago, DPS initiated the SRP working group primarily to study the potential

effects on reliability and to determine the tools needed to address any concerns identified.

The NYISO's filing describes outcomes that could potentially occur if the Commission were not proactive in considering the issues of grid reliability and system efficiency. The NYISO's filing represents a status quo outlook that fails to take into account a likely shift in system characteristics and generation location, the ongoing SRP process, the opportunities to deploy new fast-acting resources like storage and the overall system and operations of modernization that will address many of the expressed concerns.

The NYISO's declaration of transmission needs of over 1,000 miles of incremental bulk power transmission lines, above and beyond those in the AC Transmission and Western New York public policy initiatives now underway, assumes no actions beyond the current status quo. Notably, its position appears to ignore the consequential retirements of upstate fossil-fueled generating plants, the diversity of renewable resource output, and the probability of offshore wind, as well as other resources and technologies that are developed closer to load being a substantial component of the 2030 generation mix.

Similarly, the NYISO's simple declaration that reserve margins may need to increase overlooks the operational characteristics and benefits of a modernizing grid. New York and other states are experiencing a tremendous growth in entrepreneurial innovation and customer participation toward a grid that both incorporates storage technologies and is characterized by increasing levels of dynamic load management, both of which will complement the variable nature of some renewable generation.

Even under a status quo approach, the NYISO's concern about the reserve margin seems misplaced. As the NYISO itself

has stated, the increased capacity requirement will be largely met by the additional capacity contribution of the proposed renewable resources.[56] Importantly, the capacity market is valued in "unforced capacity" (UCAP) MWs and prices, and therefore, intermittent resources receive capacity payments that reflect their relative contribution to serving peak loads. The dynamic load management made possible by modernizing the grid, including new storage, will have a leveling effect on the difference between fossil-fueled and renewable generation that exists under the status quo.

This Order has been painstakingly designed to produce needed reforms and carbon reductions while protecting utility customers and maintaining an effective wholesale market and ensuring the continued bulk electric system reliability that New Yorkers expect and require. The SRP working group was created largely in response to a DPS request that the NYISO and transmission owners identify any potential reliability concerns and address how to deal with these concerns going forward. Nonetheless, if the SRP process itself does not sufficiently deal with potential bottlenecks or the need for new transmission lines, it is important for all stakeholders to continue to work towards the necessary solutions. Further, it is important that the design and operation of the bulk electric system and wholesale markets be modernized, much like is being done at the distribution level. Therefore, Staff is directed to engage stakeholders, including the NYISO, after the initial SRP working group completes its work, to ensure that the bulk transmission system is sufficiently modernized such that it can fully support the State's renewable goals. Further, the Commission through its triennial review process will have ample opportunity to

[56] NYISO July 8, 2016, Supplemental Comments on the Clean Energy Standard, p. 10.

review the bill and system impacts of the ever changing system topology and ensure that appropriate actions are taken to protect the public interest in secure and cost effective electric service.

D. Adoption of the 50% by 2030 Goal

The statewide goal of 50% renewable resources by 2030 encompasses a wide range of initiatives, of which a requirement on load serving entities is only one. The 50 by 30 goal is itself a component of a larger statewide greenhouse gas goal, and is the product of a lengthy State Energy Planning process. The 50 by 30 goal is also consistent with goals adopted by other leading states.

MI questions why the 50 by 30 goal is assumed to be a reasonable starting point. From the standpoint of fuel diversity, a goal of at least 50% renewable resources by 2030 is imperative. The 2014 generation mix for New York included 37% natural gas, 31% nuclear, and 27% renewable resources as well as small amounts of coal, oil, and solid waste. As the licenses of half of the upstate nuclear generation units expire by 2030, a renewable resource goal of at least 50% will be needed to avoid an over-reliance on a single fuel.

The Cost Study indicates that 50 by 30 is reasonably achievable. The Commission has even greater concern over the potential cost of a less ambitious standard that would leave consumers vulnerable to an over-dependency on natural gas and uneconomic bypass by many consumers if the economic and performance advances in renewable and distributed energy resource and load management technologies are not accommodated. The resiliency advantages of clean power choices, and the economies of scale and scope that can be achieved through ambitious standards and well-designed retail markets that

support consumer-motivated transactions, are the best path to a better energy future.

Concerns on whether the 50 by 30 goal may impose too high a regulatory burden conflate the State's overall clean energy goal of 50 by 30 with the more discrete effort to establish mandatory resource obligations on LSEs. The 50 by 30 goal is a cumulative outcome that will be achieved through a number of activities in addition to the LSE mandatory obligation.

Understandably, given the task of developing a mechanism to achieve the CES, the bulk of the record concerns itself with the mandatory aspect of the RES. However, in establishing a mandatory RES obligation on jurisdictional LSEs, the Commission first considered the activities that occur outside of this process that will necessarily impact the scope of compulsory elements of the plan. Those activities include the existing inventory of baseline renewable resources including the sizable state-owned renewable resources; aggressive pursuit of cost effective energy efficiency; a continued obligation and opportunity for utilities to ensure that low-income consumers have access to clean energy alternatives that help them reduce their energy burden and improve the environment; consumer initiated green energy purchases or investments; State initiated green energy purchases or investments for energy consumption by State entities; and continued participation and leadership in RGGI and support of universal complementary federal action.

Gas and nuclear industry representatives argued that rather than a renewable resources goal, the Commission should adopt a source-neutral carbon intensity goal. The carbon reductions associated with the 50 by 30 goal, however, are not the only objective of the CES. Increasing fuel diversity is another goal, and even more importantly, the CES is one

component of a long-term strategy that aims to transform and de-carbonize the way in which electricity is generated.[57] For those reasons the chief focus of the CES initiative is on building new renewable resource power generation facilities.

In consideration of the discussion above, the Commission finds and determines that the goal of the SEP that 50% of New York's electricity is to be generated by renewable sources by 2030, as part of a strategy to reduce statewide greenhouse gas emissions 40% by 2030, is reasonable and necessary to provide for the safe and adequate service of retail electric consumers in New York State and in a manner that promotes economy, efficiency, and care for the public safety, the preservation of environmental values and he conservation of natural resources. Therefore, the 50% by 2030 goal is hereby adopted by the Commission as a foundational basis and essential component of the Clean Energy Standard.

VI. THE RENEWABLE ENERGY STANDARD

A. Tier 1 - New Renewable Resources

1. Overall Incremental 2030 Statewide Target

Tier 1 of the RES consists of obligations on LSEs to invest in new renewable generation resources to serve their retail customers. The obligation is to be in the form of the procurement of new renewable resources, evidenced by the procurement of qualifying RECs, acquired in quantities that satisfy mandatory minimum percentage proportions of the total load served by the LSE for the applicable calendar year. In order to establish annual incremental targets, it is necessary to first establish a calculation methodology to translate the

[57] The relative carbon intensity of gas-fired generation is already taken into account in the RGGI market.

SEP goal of 50% renewable resources by 2030 into an incremental 2030 target for achieving the goal.

a. Calculating Statewide Load

The first step in the calculation methodology is to determine forecasted statewide load for 2030. Staff relies on the NYISO Gold Book forecast to estimate the total load expected in 2030. Since the Gold Book forecast only extends ten years, Staff extrapolates the forecast values to 2030 using a linear extension of the rate in the most recent Gold Book forecast. The Commission agrees that this is a reasonable starting point and will adopt this approach as the initial basis for the determination. Under this approach the unadjusted forecast statewide load for 2030 is 176,619,000 MWhs.

b. No Behind-the-Meter Generation Adjustment

Staff proposes to modify the base forecast by the addition of customer usage that is currently offset by behind-the-meter renewable generation. Staff proposes, for the purpose of calculating the 2014 base line, an addition of 410,000 MWhs based on NYSERDA estimates.

As a general principle, the Commission's concern in the RES is to calculate the level of load that all individual customers are placing on the electric system as the basis for establishing the level of load to be served by renewable resources. Where customers' consumption is offset by generation behind the meter, with the net result that no load is measured at the meter, whether the customers' consumption counts toward the base forecast depends on whether the generation results in RECs that are counted toward an LSE's RES compliance obligation. However, this criterion creates a version of double counting if the load is being served by renewable resources and the owner of the renewable attribute wishes to receive RECs for the MWh production. In this circumstance failing to include the load

associated with the REC would result in an underestimate of the amount of total demand that should be counted towards the 2030 goal. Ignoring such load is appropriate if the behind-the-meter generation is either not being registered in NYGATS or if such RECs are not counted towards the RES goal. In effect, as discussed below concerning voluntary consumer actions, the REC is retired. In this circumstance, neither the load associated with the renewable generation nor the generation itself is part of the program and the load will not count towards the RES goal.[58]

The Indicated Joint Utilities commented that when BTM generation is receiving net energy metering (NEM) compensation, the associated REC should be provided to the benefit of ratepayers who have contributed to the payments received through NEM. The Commission does not agree with this approach. The RECs have been contractually allocated within each transaction and, therefore, RECs should not now be reallocated to ratepayers. However, while RECs will not be reallocated, a proceeding is underway to move from NEM to a more granular and hence accurate methodology for pricing the value of distributed energy resources.[59] Until that time and because of the value that NEM provides to solar development, it is fair to say that ratepayers are as a whole supporting the development of the industry and in recognition of this contribution, the BTM load

[58] This issue will be revisited if at some later date the Commission decides that while voluntary market actions with additionality will not offset LSE compliance obligation but may be counted toward achievement of the overall program goal.

[59] Case 15-E-0751, Value of Distributed Energy Resources.

will not be included as part of the base forecast or as future load growth.[60]

At the time the current net energy metering (NEM) compensation mechanism moves to a LMP+D approach based on a more precise determination of the value of distributed energy resources, it will be appropriate to revisit the question of under what circumstances BTM load should be considered as part of the base forecast.

c. Energy Efficiency Adjustment

Staff proposes to modify the base forecast by the subtraction of customer usage that is expected to be supplanted by energy efficiency measures. Staff proposes the subtraction of 35,627,000 MWhs (2,227,000 MWhs annually) based on its analysis the State would achieve that level of statewide incremental energy efficiency gains, and believes that growth level is consistent with current NYSERDA and utility targets.[61]

Energy efficiency is a crucial and cost effective means to achieve clean energy objectives. Study after study has shown that when deployed well, energy efficiency is the cheapest

[60] This outcome is also consistent with the way BTM generation is treated by other states in the region. In states with similar LSE obligations, certificates associated with each MWh of behind the meter generation are treated on the same basis as other generation delivering directly to the grid, without adjustments to individual or aggregate obligations. See http://www.mass.gov/eea/docs/doer/rps-aps/225-cmr-14-00-draft-srec-ii-reg-020414-tracked-changes.pdf; 225 CMR 14.00 RENEWABLE ENERGY PORTFOLIO STANDARD – CLASS I.

[61] This figure includes an assumed contribution from NYPA and LIPA based on their proportional share of load, in addition to targets established for utilities and NYSERDA. Case 15-M-0252, Utility Energy Efficiency Programs, Order Authorizing Utility-Administered Energy Efficiency Portfolio Budgets and Targets for 2016 – 2018 (Issued and Effective January 22, 2016), Case 14-M-0094, Clean Energy Fund, Order Authorizing the Clean Energy Fund Framework (Issued and Effective January 21, 2016).

and most effective manner to reduce carbon emissions in the energy sector. In the CEF Order, the Commission requested that the stakeholders work with Staff and NYSERDA to determine whether the State should adopt a MWh and MW target for energy efficiency and, if so, to identify the appropriate level to be achieved and over what time period. In the REV Ratemaking Order, the Commission added to this opportunity by allowing utilities to achieve specific incentives to achieve added levels of energy efficiency.

The achievement of higher levels than the current energy efficiency targets can clearly benefit individual consumers and create system-wide value through the cost effective achievement of the RES and carbon reduction goals.[62] Higher levels of energy efficiency and its timing will positively impact both the total target and the trajectory proposed to achieve it. However, for the purpose of the initial calculation of the 2030 target, it is premature for the Commission to presume any level more than the current objectives. Rather, this determination will be revisited after the work of the Clean Energy Advisory Council is concluded. In addition, the Commission agrees with parties that the demand forecast should not remain static. During the triennial reviews the Commission will update the forecast to taken into account actions or events that are having a measurable impact on demand forecasts.

d. No Adjustment for Carbon Reducing Technologies

Staff proposes to modify the base forecast by the addition of customer usage that is expected to be created by the deployment of electric vehicles (EVs) and thermal heat pumps. Staff proposes the addition of 8,615,000 MWhs based on its

[62] Case 14-M-0101, supra, Order Adopting a Ratemaking and Utility Revenue Model Policy Framework, issued May 19, 2016.

projections. As a general principle, load growth associated with de-carbonizing actions in the transportation and building sectors requires encouragement in the State's regulatory and market approaches to encourage clean energy activity of all types. In this vein, in the DSIP Order and CEF Order the Commission asked parties to pay particular attention to actions and incentives that would encourage these efforts.

With regard to EV penetration, it is appropriate for utilities to have specific incentives and offer services to build out this critical industry. Increased levels of EV can have several beneficial aspects for the electric system, including increasing load factor efficiency through the addition of night time load and increasing the levels of fast acting local regulation and other ancillary services that support integration of higher levels of renewable resources. Similarly, the use of geothermal heat pumps can also support reduction of carbon in the heating sector and again improve electric load efficiency.

The Commission does not agree, therefore, that the load estimates should be increased to account for these activities. In both instances, rather than affecting the calculation of the RES, improved pricing will be developed through the Value of DER proceeding,[63] where adoption of an LMP+D methodology is being considered, the actions of FERC in the wholesale market, and the activities of the Clean Energy Advisory Council to ensure that the total net impact of these efforts are carbon neutral or positive. In addition, as discussed further herein, the Commission will consider whether a TREC program should be added. Individual actors who engage in

[63] Case 15-E-0751, supra.

these carbon saving activities also should be attracted to participate in other carbon reducing activities like energy efficiency programs that in combination allow them to achieve either low or net zero carbon impact.

Moreover, given the limited current market share it is not necessary at this time to calculate their impact on load growth. Over time, if these efforts do have a significant impact on electric demand to the point where they would represent a substantial increase in the RES requirement, the Commission will reconsider how best to treat these particular forms of load growth. However, for the purposes of setting the initial base line target, the Commission rejects this element of the Staff's recommendation.

e. Net Total Load

The net result of the two approved adjustments to the original base load is as follows:

	2030 MWhs
NYISO Load Extrapolated to 2030	176,619,000
Energy Efficiency Subtractions	(35,627,000)
Resultant 2030 Load	140,992,000
50% of 2030 Load	70,496,000

f. Baseline Renewable Resource Adjustment

The next step in the calculation methodology is to subtract the existing baseline of renewable resources from the 50% of load figure to determine the incremental level of new renewable resources needed to satisfy the goal. The Commission believes that because these resources are already included in the base of resources used to meet State load, it is appropriate to subtract out the existing quantity. The Commission will accept Staff's estimate of 41,296,000 MWh and assumes that all

of these resources will remain operational.[64] The net result of the adjustment is as follows:

50% of 2030 Load	70,496,000
Baseline Renewable Resources 2014	(41,296,000)
2030 Incremental Statewide Target	29,200,000

2. Annual Targets

Although the 2030 target of 50% renewable resources is clear as a percentage goal, the targeted number of MWh that must be procured by LSE's in any time period is dependent on a number of factors that will necessarily alter the level of annual requirements. In the previous Renewable Portfolio Standard and Energy Efficiency Portfolio Standard programs the Commission derived final targets from forecasts at the outset and did not subsequently revise them.[65] The approach taken here reflects the longer term, market driven and more comprehensive nature of REV and the RES as a component of this reform. In particular, the Commission anticipates that the trajectory for renewable development will be impacted by all forms of voluntary market activity. In other words, retail market participation, including customer behavior in terms of energy efficiency, behind the meter supply investments, supply mix, and hedging strategies, can and will impact the requisite level of mandated procurement in any given time period. As already discussed, the Commission expects that utilities and NYSERDA will both pursue

[64] If any of the renewable resources currently counted in the baseline sell RECs into other markets at some point in the future, the Commission may adjust the baseline in the future accordingly.

[65] Case 07-M-0548, Energy Efficiency Portfolio Standard, Order Establishing Energy Efficiency Portfolio Standard and Approving Programs, issued June 23, 2008. Case 03-E-0188, Retail Renewable Portfolio Standard, Order Regarding Retail Renewable Portfolio Standard, issued September 24, 2004.

and achieve higher levels of energy efficiency savings than currently forecasted. This outcome will positively affect consumers both in terms of overall bill impacts and achievement of environmental objectives. It will also necessarily require an adjustment of both the ultimate 2030 target and the trajectory to achieve it.

Establishing annual targets also must be done in the framework of other REV enabled system changes and associated market developments. There are considerable efforts underway to support the wide deployment of distributed energy resources throughout New York as a means to increase system reliability and resiliency as well as promote a more efficient, cost effective and cleaner grid. Starting with existing efforts related to NY-Sun, community solar, community aggregation, demonstration projects and demand response activities, this market momentum is already taking root. In the last three years related to solar alone there has been a 500% increase in growth. With the efforts being made in the CEF fund, the growth of the Green Bank, the recent filing of the DSIPs and the Commission's Order on Regulatory and Rate Design changes, it is anticipated these markets will develop even more rapidly and consequently have a dynamic and positive effect on the supply available to meet the demand for renewable energy. Based upon the speed of this activity and the choices of individual customers, the State may find itself in an enviable position of accelerated achievement of the 2030 target.

Related to these market developments are the effect that improved information, pricing, and product definition will have on customer grid-based supply choices. One of the great advantages that the Commission has in the development of the RES targets is the increased public awareness and interest in taking personal action to combat climate change, whether in the

interest of protecting against environmental damage or to ensure resiliency and to achieve positive economic as well as environmental outcomes. Businesses and institutions as diverse as Walmart, Google, the State University of New York and the U.S. Military have adopted programs that increasingly rely on renewable resources due to their economic and environmental benefits. From 2012 to 2015, the capacity of publicly announced corporate renewable power purchases increased from 0.05 GW in 2012 to 3.23 GW in 2015.[66]

The State also has the opportunity to stimulate mass market consumer interest in grid based renewable purchases through the actions taken in the development of the retail market, including product requirement and product definition. Increasingly, utilities and retail market providers are recognizing that the mass market that purchases their services is far from monolithic. Many ESCOS are finding that product differentiation beyond price and target marketing as part of customer attraction and retention is of significant value. As part of the ESCO reset process, the Commission is considering how to best define value added products offered by ESCOS to the mass market. Many ESCOs today offer green energy products that may or may not conform to the forthcoming RES requirements. There is considerable value in the development of defined green products that consumers who have an interest in protecting the

[66] Corporate Renewable Deals 2012 to 2016, Business Renewables Center. In 2015, USEPA's Green Power Partnership program had over 1300 partners collectively using 30 GWh of green power annually. https://www.epa.gov/greenpower/green-power-partnership-program-success-metrics. From 2012 to 2016 there was a 40% increase in companies adopting sustainable business principles, and the amount of assets subject to fossil divestment rose from $50 billion in 2014 to $2.6 trillion in 2015. State of Green Business 2016, GreenBiz Group Inc., pp. 34, 54. See also, Creating Renewable Energy Opportunities, Utility-Corporate Buyer Collaborative Forum, June 2016.

environment will naturally gravitate to if they have confidence in the veracity of the offering.

Defining these products is the appropriate subject of the ESCO reset docket where these issues are currently pending. However, in the interest of supplying additional guidance, the Commission notes that for these products to be real and avoid market place confusion, they must offer environmental value that is greater than the level of renewable resources that can be acquired as part of normal default load. Thus, in defining a green product, the minimum content should be in excess of annual mandatory targets.

Based upon experience in the development of shared renewable resources, the value of these products to customers will also be enhanced if customers are confident that some if not all of the renewable energy they are purchasing is produced in New York. Again, the determination of this content issue is beyond the scope of this proceeding, but Staff is directed to work with 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.[67]

The successful stimulation of these customer-initiated choices will have a necessary impact on the trajectory of the required acquisitions to achieve the 50% target for 2030. It is anticipated this demand will have separate effects based upon the consumers' individual choices. Many consumers will want to

[67] To avoid any suggestion of a commerce clause violation, the Commission is not suggesting that the LSE must use NY produced power to meet its compliance obligations. Rather, the focus here is on directing efforts to meet consumer demand for accurate information and full choice on the content of the supply they purchase and the location of the source.

claim that their participation is voluntary or additional to the State's program. When a purchase of renewable resources is made in the absence of a government mandate, or if it is not counted toward compliance with a government mandate, it is typically described as "voluntary" or "additional" to any compliance obligation. Over the years, well-established national and international protocols have been developed to ensure that any commercial claims of voluntary or additional activity conform to guidelines and are not misleading to the public.[68]

In the context of the RES, for example, if a customer served by an LSE chooses 100% renewable energy, the customer may want to claim "additionality" and require the LSE to retire RECs associated with more than 50% of the served load. This action prevents the LSE from reducing the amount of RECs it would otherwise require to meet its minimal compliance obligation. In this way, the customer is increasing the amount of incremental renewable resources.

Other customers choosing to go higher than 50% may instead want or be indifferent to the LSE applying the excess to other customers less willing or able to make those choices. The net effect of this action is that, by revealing their preferences, customers may be able to accelerate the State's achievement of the 50% target, or, that the target becomes the minimum and that the revealed preference of New Yorkers as a whole is to have a greater than 50% resource mix of renewable resources. In all cases, the development of a vibrant market for consumer choice for clean resources and the development of standard products that create confidence, will impact the timing

[68] See, e.g., Guides for the Use of Environmental Marketing Claims (Federal Trade Commission Green Guide), 16 CFR Part 260; also see Environmental Marketing Guidelines for Electricity, National Association of Attorneys General.

of the mandated requirements and their associated costs. As discussed below, banking of RECs will be available for LSEs if demand for green products, as expected, proves to be substantial. A high demand for green products may also warrant an adjustment to the mandated target that better reflects positive market interest for renewable development and attendant lower risks and costs to those New York consumers who do not share that interest.[69]

The Commission also is sympathetic to the interests of some consumers who would prefer to have a 100% renewable energy mix and make no contribution to the ZEC program. This type of reallocation of individual consumer obligations may prove to be in the broader public interest if it results in new renewable development in New York that counts towards the 50 by 30 standard and is subject to contractual obligations for at least as long as the NYSERDA contract with the nuclear units as described infra. Staff shall review the development of this opportunity and provide recommendations to be considered as part of the ESCO reset Order and implementation phase

The Commission also recognizes that even while it is optimistic for success, the development of new renewable resources or any new resource can take more time than anticipated. The concern here is that if supply is not able to meet the jurisdictional level of demand, the prices may increase higher than is reasonable for consumers. In this circumstance, the Commission may decide to adjust near-term targets downward, increase obligations in later years, or focus on actions that

[69] The Commission also notes that in addition to the consumer based actions, changes in RGGI pricing, wholesale market rules and federal clean energy requirements can all impact the pace of State action. Rather than detract, these phenomena add to the need for the State to remain flexible in its approach to annual targets.

can facilitate development. Before taking such a step, all reasonable measures to reduce project costs, including soft costs such as siting and interconnection, should be pursued.

Along with the ability to accommodate market dynamics, the trajectory for acquiring renewable resources under the RES must be informed by improvements in the cost structure for renewable resources, both in front of and behind the meter. Over the last three years the reported installed cost of solar has declined by about 26%. The cost of wind has seen a similar improvement and technology changes associated with offshore wind development and economies of scale will also improve these cost dynamics. Additionally, as noted in the cost study, supply prices for natural gas may also increase electric prices. The cost study also noted other factors such as the availability of federal tax credits, interest rates and other market factors which can affect the economics of acquiring new renewable resources. All of these fundamentals have the effect of potentially improving the competitiveness of renewable resources and reduce the attributed payment they seek in the REC auctions, all which benefit consumers.

All of these factors suggest a pragmatic approach to establishing the yearly targets for LSE compliance under the RES. Staff has recommended that the Commission establish firm targets in the initial years and then provide a triennial review. While firm targets for planning purposes are necessary for the near-term, there is value to the market in seeing a potential trajectory that is non-linear and that looks to take advantage of voluntary consumer activities and reduced renewable supply costs. The Commission directs Staff, as part of the implementation plan to i) review and either confirm or propose modifications to the targets adopted here for 2018-2021 after taking into consideration current market conditions including

the result of the 2016 NYSERDA LSR solicitation[70] and ii) develop a potential acquisition curve for the years 2022-2030. The curve will serve simply as a base case calculation that will be adjusted as necessary based upon actual market dynamics.

In summary, the Commission establishes, subject to the review directed above, the following fixed targets and requires each New York LSE to serve their retail customers by procuring new renewable resources, evidenced by the procurement of qualifying RECs, acquired in the following proportions of the total load served by the LSE for the years 2017 through 2021:

Year	Percentage of LSE Total Load
2017	0.6%
2018	1.1%
2019	2.0%
2020	3.4%
2021	4.8%

[70] NYSERDA is currently evaluating responses to the 2016 RPS solicitation. RECs procured through that solicitation will be treated as Tier 1 resources that will provides RECs in or after 2018. The Commission recognizes that current market conditions, including the limited continuation of applicable federal tax credits, may be favorable, resulting in attractive pricing in this current solicitation. In that case, there is no reason to delay additional procurement or supply. Any such additional procurement can be funded through an acceleration of the consumption targets for the years 2018 - 2030. Accordingly, if NYSERDA determines that acceleration is warranted because the additional financial commitment would result in an overall weighted average award price of 2016 Main Tier projects equal to or less than the 2015 Main Tier weighted average price of $24.57 per REC, it is authorized to implement additional procurement levels in the 2016 procurement and file a report with the Commission documenting its determination and the results.

Over time through the triennial review process, the Commission will adopt incrementally larger percentages for the year 2022 through 2030, with sufficient lead time for the LSEs to incorporate the changes into their planning processes. The periodic review and target setting will also take into account the balance of likely incremental supply with demand. Based on current forecasts of future loads, the above percentages will yield the following MWhs of output from new renewable resources:

Statewide Yield (MWhs)

Year	Distribution Utilities & ESCOs	LIPA	NYPA	Direct Customers	Statewide Total
2017	705,595	120,244	139,225	8,936	974,000
2018	1,261,429	214,967	248,900	15,975	1,741,270
2019	2,263,192	385,682	446,563	28,662	3,124,100
2020	3,841,197	654,599	757,928	48,647	5,302,371
2021	5,455,424	929,688	1,076,440	69,090	7,530,642

3. LSE Obligation

Achieving the statewide 50 by 30 goal will involve a variety of elements and resources, including market-based, regulatory, and non-jurisdictional factors. The basic regulatory component of the RES will be an obligation on LSEs, consistent with the approach used in neighboring states. This will place compliance costs primarily on generation supply charges, where they are most appropriately applied. Placing compliance costs on supply will encourage efficiency, support voluntary hedging and power purchase agreements, and help to develop markets at the retail level, by encouraging competitive LSEs to develop innovative products. Consistency with other states will allow developers to participate in markets in

multiple jurisdictions and may enable trading to reduce overall costs.

The obligation will apply to every LSE serving retail load within a regulated distribution utility territory. This will include investor-owned utilities serving in their role as electric commodity supplier of last resort, jurisdictional municipal utilities, competitive ESCOs serving electric commodity to retail customers, and community choice aggregators not otherwise served by an ESCO.[71] Customers purchasing power directly from the NYISO will be considered LSEs for this purpose, so that their consumption levels are accounted for without other customers bearing the burden.[72] This adoption of the Renewable Energy Standard is a changed regulatory requirement for the purposes of the Uniform Business Practices (UBP).

Each LSE will be responsible for supplying a defined percentage of retail load with supply derived from eligible resources, as defined by the compliance methods discussed below. The obligation will be annual, determined by multiplying the LSE's actual load for that year by the percentage RES target for that year.[73]

Representatives of ESCOs argued that some ESCOs have fixed price contracts with customers, and that these ESCOs could

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[71] See, Case 14-M-0224, Community Choice Aggregation Programs, Order Authorizing Framework for Community Choice Aggregation Opt-Out Program, issued April 21, 2016.

[72] Under the Federal Power Act, any sale of electricity that is not a sale for resale s subject to Commission's jurisdiction instead of FERC's. A sale by the NYISO to a direct customer consumer is not a sale for resale, it is a retail sale subject to Commission jurisdiction.

[73] The LSE's obligation will be measured at the wholesale level, i.e., grossed up to reflect the generation needed to serve customers prior to line losses.

not pass through the additional costs created by the LSE obligation. As an equitable matter, all customers and market participants must share in the RES effort. In the early years of the RES, the incremental obligation will be small, so this will not fall outside the range of normal business risks. As the LSE obligation grows, ESCOs will have timed out of their fixed price obligations, and the RES obligation will provide both incentives for ESCOs to develop new products, and opportunities to appeal to voluntary 100% green markets.

Municipal utilities have argued that they should be exempt from the LSE obligation because they already are supplied with large amounts of hydropower. NYPA hydropower that is sold to municipal utilities on a wholesale basis, however, is part of the baseline. The jurisdictional increment of the RES is in addition to the baseline and is the responsibility of every load serving entity. If municipal utilities were exempt from the LSE obligation, other LSEs would have to carry their portion of the statewide goal. The fact that municipal utilities currently obtain very low-cost power is not a persuasive argument for exempting them from sharing in a statewide obligation.

Several parties commented that microgrids and combined heat and power generators should be subject to the LSE obligation. At this time, the amount of load represented by these categories is relatively small, and the CES should not become an obstacle to their further development. Potential application of the LSE obligation to new microgrids and CHP generators should be considered as part of the triennial review process.

4. Long-Term Procurement Issues

a. Need for Long-term Procurement

The entire RES goal could theoretically be satisfied by a spot market for RECs. In practice, however, given the

conditions of markets at this time, a sole reliance on a spot market – i.e., a completely self-initiated market without a long-term coordinated procurement strategy - would result in high compliance costs. A long-term procurement process is needed to achieve the 50 by 30 goal.

Staff described the risks faced by renewable project developers in competitive markets. These risks would lead to high compliance costs that would be passed on to customers. The most obvious concern is that financing for renewable projects will be more expensive without a long-term assurance of a revenue stream. Under an approach that relied on a spot market for RECs, developers would assume the risk of technology costs declining, with established projects having to compete against lower-cost entrants. A long-term contract for RECs can address this problem, although there will be a remaining risk of change in energy prices.

This concern is enhanced where there is a competitive retail market structure. Each LSE will have a compliance obligation based on its annual retail load. Customers are free to switch suppliers, however, and no LSE is guaranteed constant or predictable retail sales volume for commodity sales. There will be risk attached to long-term procurement obligations undertaken by any LSE, because the LSE has no assurance that it will retain customers to support the long-term obligation.

In short, developers argue that they will face risk in the absence of long-term bundled contracts, while LSEs argue that they will face risk in entering long-term contracts. Because demand for RECs will be mandated and thus relatively inelastic, REC supply shortages caused by these risks would result either in high prices or in non-compliance.

Establishing a long-term procurement process is intended to complement a spot market for RECs, not to eliminate

it. Depending on how procurement targets are set and how the market responds to solicitations, there are likely to be times when long-term procurement does not satisfy the entire LSE obligation. There will also be LSEs that choose not to participate in the long-term procurement process.

b. Types of Long-term Procurement

Much of the comments about long-term contracts have centered on a choice between bundled power-purchase agreements and utility-owned generation. REI argued that PPAs will be the most cost-effective means of bringing renewable developers into New York on the scale needed to meet the targets. They cited the Cost Study as confirming the value of PPAs. Utilities argued that PPAs would present risks to ratepayers, but that UOGs can substantially reduce costs due to lower financing costs and continued ownership of the residual value of plants. Renewable developers who oppose utility ownership argued that the residual value is reflected in their bid prices. IPPNY argued that allowing utility ownership would reverse a long-standing Commission policy. Opponents of utility ownership claimed that utilities would have an advantage in competitive processes because they could understate initial costs and then recover cost overruns from ratepayers. Utilities proposed that their ownership could be limited to a financial basis, with independent companies developing, building, and potentially operating the renewable facilities. IJU proposed a portfolio approach, combining a utility finance-only ownership model with a REC-only market and a voluntary market.

Under the current RPS program, long-term procurement is achieved through REC-only contracts executed by NYSERDA following competitive solicitations. In this model, developers sell the power commodity in capacity and energy markets and only the REC is subject to a long-term contract. Proponents of PPAs

and UOGs argued that the energy price risk involved in a REC-only contract will result in higher bids for the REC attribute. Those parties suggest that REC contracts should be used only for the residual LSE obligation that is not procured through a bundled contract.

c. Power Markets in New York

The manner in which to best achieve the Commission's goals, at reasonable cost, is directly tied to the design of power markets in New York. In New York's restructured markets, distribution utilities do not own generation facilities. Generation plants are owned by independent producers, who sell wholesale power primarily through markets operated by the New York Independent System Operator. Power is sold at retail to customers by competitive ESCOs as well as distribution utilities as default service suppliers for those customers who do not choose a competitive supplier. The power sold at retail by ESCOs and utilities is primarily purchased from the independent generators through the wholesale market, and is delivered physically by distribution utilities.[74]

Under this structure, competitive markets set the power price, and most of the Commission's rate regulation activities are limited to the costs of physically delivering the power and maintaining a reliable delivery system. The previously established clean energy programs such as the RPS and EEPS have been funded through surcharges on delivery bills. Costs related to energy usage, however, should be reflected in the energy component of the bill for the reasons previously discussed.

[74] The wholesale markets are complemented by bilateral markets. This description of New York's market structure is intended to be a general overview and does not reflect numerous exceptions and detailed qualifications.

d. Determination

The volume of new development that will be needed to achieve 50 by 30 is much greater than the annual pace the RPS program has achieved to date. Analysis of this issue is driven by the Commission's fundamental responsibility to consumers to achieve the SEP goal at a reasonable cost. For this it is apparent that some form of long-term procurement will be needed.

Investors simply will not look to build renewable generation facilities without sufficient certainty that they will successfully earn a return on their investment. In the case of the type of long-lived capital investment necessary to construct and operate a generation facility, a long-term contract or other durable mechanism providing reasonably certain terms will be necessary to induce such investment. Without the assurances that a long-term contract provides, the renewable generation projects that the State requires will not come to fruition.

The principal question is whether that procurement should involve only RECs or whether it should also involve bundled power contracts and/or direct utility investment. A subsidiary question would be whether a bundled procurement approach, if taken, should be achieved through PPAs, UOGs, or some combination. Reasonable arguments were made on various sides of this issue. In addressing this question, the Commission has broad authority under the Public Service Law. The determination will be governed by policy concerns as to the most reasonable and effective way to achieve the renewable goal.

Mandating utilities to enter long-term PPAs would present a significant financial risk to ratepayers and to utilities. Because customers in New York can choose their power suppliers, no supplier is assured of the size of its customer base, for purposes of energy sales, over the long-term. This is

true of distribution utilities as well as ESCOs. Because there is no assurance of a long-term customer base from which to recover the cost of power contracts, mandated PPAs would create the risk of utilities recovering costs from a dwindling group of default energy customers, or to resort to a non-bypassable surcharge that applies to all delivery customers. Because a delivery surcharge limits competitive choice, it is not the preferred alternative. Advocates of PPAs argued that there are hedge benefits as well; but hedging in power markets tends to occur over three- to five-year periods, not 20-year periods.

Utility-owned generation can cost less than the alternatives, in the near-term, largely because utilities have lower finance costs. But utility owned generation also has the potential to inhibit entry by other market participants, which can result in less competition and higher costs in the long-run.

Procurement that is limited to the REC, and does not include the power supply itself, avoids the pitfalls of PPAs and UOGs, but may result in higher costs for the renewable attribute, as developers build the increased risk of power cost fluctuation into their bids to sell the renewable attribute.

The potential for federal preemption creates a risk that could slow the implementation of the RES. The U.S. Supreme Court decision in Hughes v. Talen Energy Marketing, LLC, 136 S. Ct. 1288 (2016) does not directly bar power purchase agreements. It does, however, cast uncertainty over state-mandated contracts that parties may argue interfere with federally supervised wholesale markets.

An additional concern is a practice of FERC which places constraints on the Commission's ability to mandate PPAs in a cost-effective manner. FERC's current policy of imposing "buyer-side mitigation measures" upon various resources participating in the downstate installed capacity markets

creates significant risk that a PPA backed by a public resource (including utility ratepayers) could fail to clear the capacity market thereby forcing ratepayers to purchase capacity from other resources that would not otherwise be needed.[75] Although exemptions for certain renewable resources or other policy-driven procurements have been discussed in various orders, no clear policy delineations exist at this time. For instance, a proposal currently pending before FERC would allow limited exemptions from buyer-side mitigation for certain intermittent renewable resources below a 1,000 MW annual cap.[76] Whether this policy is ultimately adopted or not, FERC's current approach to capacity markets, and presumptions against bilateral contracts of major retail suppliers, cast a shadow over a reliance on mandated PPAs to achieve RES targets. The risk of federal preemption could disrupt and delay the entire RES initiative.

The arguments in favor of PPAs and UOGs are substantial. Consistent with the Commission's long-standing policies, however, as a matter of first preference long-term PPAs will not be mandated, nor will the Commission revert to a blanket authorization of traditional UOGs. Long-term procurement will begin by employing the current method of fixed-price REC contracts. This approach will provide a simple transition from the RPS program into the RES. Because of the much larger procurement levels under the RES, and because the

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[75] There is also considerable risk that the buyer-side mitigation measures may be extended to the rest-of-state capacity markets, which is pending before FERC. Docket No. EL13-62, Independent Power Producers of New York, Inc. v. New York Independent System Operator, Inc., Order Denying Complaint (issued March 19, 2015).

[76] See Docket No. ER16-1404, New York Independent System Operator, Inc., NYISO Compliance Filing (filed April 13, 2016).

procurements will not be budget-bounded as RPS procurements are, a wider range of developers is expected to participate.

e. Review of Procurement Practices

The determination here is a continuation of the Commission's policy of relying on markets where feasible, as the best long-run approach to reducing costs and promoting innovation.[77] In the context of the RES, a balance is needed between long-run reliance on markets and the need to achieve consistent and measured progress toward the 2030 goal. For that reason, REC markets will be closely monitored and if projects are not being developed in New York at a satisfactory pace, the Commission will consider alternative procurement approaches.

The effectiveness of REC-only procurement will be evaluated in the triennial review process. Criteria to be considered in this review include:

- whether supply is available to meet LSE obligations;
- cost of RECs compared with neighboring states and other markets;
- extent of reliance on Alternative Compliance Payments;
- effects on ratepayer cost and risk and overall bill impacts;
- rate of entry by competitive developers;
- extent to which projects are developed in-state; and
- extent of in-state projects selling RECs into neighboring markets.

[77] The Commission's decision to limit mandated procurements to REC-only should not inhibit market participants in developing innovative approaches for the procurement of new Tier 1 resources.

5. Design Parameters

a. No Separate New Resource Tiers

Tier 1 is for the procurement of new renewable resources of all types beginning commercial operation on or after January 1, 2015. The use of multiple tiers would reduce the competition within tiers that is necessary to achieve lower long-term costs. Although numerous parties propose separate tiers for preferred types of new resources, it is more effective to allow all new resources to compete directly with each other. In its White Paper, Staff correctly points out that co-incentives can serve as an effective means to provide financial support that is determined to be appropriate to advance state policy.

Some parties argue for a separate obligation for offshore wind. Offshore wind is an evolving technology. The Bureau of Ocean Energy Management identified the coastal region of New York as an ideal location for offshore wind development. The Commission agrees that offshore wind will be a vital component in achieving the State's renewable goals. There is no need, however, to immediately establish a specific near-term target because NYSERDA is already tasked with developing a blue print for offshore wind development for the State. The appropriate next step, therefore, is to await NYSERDA's study and request that NYSERDA include in its analysis recommendations on the best solutions for maximizing the potential for offshore wind in New York.

Some parties also argue for a separate obligation related to energy storage. Storage is a critically important component of the energy system that is both distributed and increasingly reliant on intermittent resources. Unlike other resources, the load shifting and fast response capabilities of various forms of storage resources allow them to provide

simultaneous value as an energy and reliability resource. Storage can also provide value to the distribution based retail and bulk power markets. The Commission agrees with the view expressed by NYBEST that it is important for utilities to gain understanding of the capabilities of storage through direct hands on experience. For those reasons and in order for storage to gain its appropriate place as a resource that provides network value to the distribution system provider, the Commission has allowed utilities to invest in storage to support integration of renewables and is looking for the best mechanisms to value fast acting firming resources on the distribution grid in the development of pricing for DER. The Commission has specifically directed the utilities to consider the impact of storage as part of their DSIPs. It is expected that the value of storage to be accurately monetized in the development of the retail markets for energy efficiency and the utility EAMs for system efficiency. In this Order the Commission is also directing Staff to work with the ISO to make sure as part of the development of the CES, the ISO is improving the bulk power market to better signal and value the ability of storage to firm resources and improve the reliability of the bulk power system in a manner that is more efficient and secure than transmission alone. FERC has already commenced working on this specific issue.[78] In short, it is without question that modern markets must sufficiently and accurately value storage as a vehicle to design and optimize network planning and operations. However, as a reliability support and system optimizing resource, storage is not properly characterized as a standalone renewable energy

[78] FERC Docket No. AD16-20-000, Electric Storage Participation in Regions with Organized Wholesale Electric Markets, Letter Requesting New York Independent System Operator, Inc. Response (issued April 11, 2016).

resource under the CES. That being said, if the various mechanisms that the Commission is pursuing to ensure storage takes it rightful place as a critical resource for the modern grid prove insufficient, this topic will be revisited.

NY GEO proposes a separate thermal renewable energy credit or "TREC" requirement applicable to geothermal heat pumps, to recognize the manner in which they utilize renewable geothermal energy and reduce system wide carbon emissions. Including geothermal heat pumps as an eligible technology could add an additional source of competitive RECs to the overall compliance pool, which could reduce costs for all participants. NY GEO's proposal acknowledges, however, that there are administrative complexities involved in determining the mechanism by which geothermal exploitation can be converted into TRECs. During the Implementation Phase Staff will propose a process for parties to consider such complexities and to explore practical administrative mechanisms that might be employed to accommodate geothermal heat pumps as an eligible technology.

b. Eligibility

Staff’s proposed eligibility framework is reasonable. Resources eligible to provide Tier 1 compliance will mirror the eligibility rules currently used for the Main Tier of the RPS, with the exception that the former 30 MW limit on low-impact run-of-river hydroelectric facilities is eliminated. The eligible resource categories will include Biogas, Biomass, Liquid Biofuels, Fuel Cells, Hydroelectric, Solar, Tidal/Ocean, and Wind. More detailed requirements as to eligibility of these resources are contained in Appendix A entitled Eligibility of Resources. Several parties argued that there should be no restrictions at all on the eligibility of large scale hydro facilities. This issue was extensively debated in the creation of the RPS, with many parties opposing the environmental impacts

of large impoundments, including methane emissions. The resolution in that proceeding, that no new storage impoundment will be permitted for any eligible hydroelectric facility, remains reasonable and is not changed. To the extent any factor has changed since the RPS Order, it is an increasing awareness of the climate change impacts of methane and concern over methane releases from large hydro impoundments, particularly new ones in which flooded vegetation would be decomposing and releasing methane.

Staff's proposed delivery criteria for geographic eligibility is also adopted. Eligible facilities must either be located in New York or in a control area adjacent to the New York Control Area, with documentation of a contract path and delivery of the underlying energy for consumption in New York between the generator and either the New York Spot Market administered by the NYISO or an LSE in New York, including transmission or transmission rights. More detailed requirements as to geographic eligibility are contained in Appendix A entitled Eligibility of Resources.

c. Compliance.

The medium of compliance will be the REC, with one REC created for each one MWh generated by an eligible facility. As mentioned, this is the universal unit of measure used in multiple jurisdictions, which allows efficient trading with liquidity, transparency, and verification. RECs will be tracked and verified through NYGATS. Ideally, NYGATS will be able to verify eligibility including the delivery requirement described above for some or all of the resources such that the delivery requirement documentation can be mostly met through NYGATS. A description of NYGATS is included in Appendix C.

Each LSE will demonstrate compliance through an annual compliance filing. LSEs may purchase RECs from NYSERDA for

retirement by the purchaser, or may self-supply by direct purchase and/or sale of tradable RECs,[79] but a REC can only be used once for compliance and after a REC is used to demonstrate compliance it is permanently retired. ESCO's may also develop and own renewable resources for sale to their retail customers. RECs purchased from NYSERDA in 2017 may not be traded, but may be sold back to NYSERDA at cost if not needed to demonstrate compliance. Any excess RECs held by NYSERDA at the end of a compliance period will be eligible and offered for sale by NYSERDA in subsequent compliance periods. NYSERDA's role as the central procurer of RECs is intended to contribute to reducing the cost of compliance. However, the tradability of NYSERDA procured RECs could result in increased cost. Accordingly, for Compliance Year 2018 and following, Staff will include a recommendation regarding whether NYSERDA procured RECs should be tradable as part of its implementation proposal and parties should be prepared to comment on the concern that trading of NYSERDA procured RECs may result in increased cost through the arbitrage.

MI questions the need for a REC obligation, arguing that the current method of RPS procurement may result in lower costs by preventing developers from selling RECs into other states. In a similar vein, some utilities argued that fully centralized procurement would obviate the need for a REC market.

Notwithstanding those comments, the parties demonstrated strong support for NYSERDA's continuing role as a central procurement agent. Some utilities argue that NYSERDA procurement should be exclusive. Their proposal that LSEs

[79] For example, if an entity enters into a combined power purchase agreement with RECs obtained outside of the NYSERDA central procurement process, the RECs obtained in that contact would be fully tradable.

should not be able to self-supply outside of the NYSERDA process is rejected. Self-supply and third-party procurement by LSEs will provide competition and a benchmark for measuring the effectiveness of central procurement.[80]

The compliance period shall be January 1 to December 31 of each year, beginning in 2017. The settlement date for demonstrating compliance will not occur until a reasonable time after the NYISO settlement process for the compliance period ends to allow LSEs a settlement period opportunity to re-calibrate their REC supply for the compliance period to match their actual obligation quantity. The details of the settlement process will be included in an implementation proposal by staff for inclusion in an implementation order.

For the Year 2017 compliance period, by December 1, 2016, NYSERDA shall publish on its website a REC price and the estimated quantity of the RECs NYSERDA will offer for sale in the 2017 compliance period. The REC price offered will equal the weighted average cost per MWh NYSERDA paid to acquire the RECs to be offered, plus a reasonable Commission-approved adder to cover the administrative costs and fees incurred by NYSERDA to administer Tier 1. NYSERDA will file a petition with the Commission proposing the amount of the adder by August 25, 2016, in order to allow the Commission an opportunity to consider the adder at its November 2016 Session. For subsequent years, Staff will propose a methodology for pricing and offering RECs as part of the implementation phase of this proceeding.

By December 1, 2016 for the Year 2017 compliance period, each LSE will inform NYSERDA whether it intends to

[80] Although the precise terms of independent procurement may not be known due to proprietary reasons, the competitiveness of independent procurement may be inferred from the resulting market offerings.

purchase RECs from NYSERDA during the compliance period. During the 2017 compliance period, NYSERDA will offer the RECs for sale in the compliance period to each participating LSE with a right of first refusal to each participating LSE to purchase their proportional share of the available RECs based on historical share of load. As part of the aforementioned petition, NYSERDA will establish a sales and payment schedule during the compliance period intended to generally match on a periodic basis (monthly or quarterly) the sales quantity to the expected actual load quantity so as to minimize the time that NYSERDA is holding RECs in its own account. Any unsold RECs at the end of the compliance period will then be offered by NYSERDA for sale generally to the participating LSEs that wish to purchase them in a non-discriminatory manner during the settlement period to satisfy their then-current obligation. For years following 2017, Staff will propose a methodology for consideration by the Commission for determining the terms for the purchase of RECs.

d. Alternative Compliance Payment

The development of voluntary market activity, as described above, can potentially have a large effect on the overall bill impacts of the CES, as voluntary and market-driven actions increase the amount of renewable generation, reduce the total amount of jurisdictional load, and shift usage.

With respect to the LSE obligation itself, one vehicle by which costs will be mitigated through a principal compliance flexibility measure is the Alternative Compliance Payment (ACP), which is a payment made as an alternative to demonstrating compliance with RECs. The ACP is not a penalty for non-compliance; rather, it is an alternative avenue to compliance. In effect, it caps the total cost of the RES because LSEs will have no need to incur costs higher than the ACP. ACP payments

will be made to NYSERDA during the settlement period for the Compliance Year.

Disposition of ACP payments must always be applied to the benefit of consumers by reducing the cost of the RES program. As part of an implementation proposal, Staff will consider the ways this policy can be achieved and will make recommendations for consideration by the Commission as part of an implementation order.

By December 1, 2016 for the Year 2017 compliance period, NYSERDA shall publish on its website a per MWh ACP price for the 2017 compliance period. The ACP price will equal an amount calculated as the published REC price plus 10%. Staff will propose a methodology for establishing the ACP for the Commission's consideration for subsequent years as part of the implementation phase. Many states within our region have adopted ACP as part of their RPS programs. The alignment or divergence of ACP requirements can materially affect the cost of compliance. Moreover, regional markets enabled through consistency of state requirements can contribute to reducing the cost of achieving the RES goal. Accordingly, as part of implementation, the Commission will work with the State's RGGI counterparts to find ways of supporting stronger regional consistency that can benefit all consumers.

e. Banking and Borrowing

A second vehicle by which costs will be mitigated through a principal compliance flexibility measure is the banking of RECs. Staff proposes that banking of RECs should be permitted and left open the issue of borrowing. The Commission agrees that short-term banking of RECs is an effective tool to allow flexibility and manage compliance efficiently. Banking will also apply to NYSERDA procurements, which may exceed LSE Obligation targets by large amounts if market conditions are

favorable. Terms for banking will be adopted in an implementation order. As discussed previously, the cost of complying with the RES program can be reduced through consistency with other States and the development of regional markets. Accordingly, Staff should consider how other state programs in the region have addressed this issue and the applicability of those approaches to the NY RES.

The Commission will not allow borrowing of RECs at this time. It is not necessary because of ACP and produces a risk of non-compliance. An LSE facing a shortfall can either purchase tradable RECs on the market from eligible in-state or out-of-state sources, or make an ACP payment. If borrowing is not an option, LSEs will have a greater incentive to procure sufficient RECs during the compliance period.

GE proposed that a force majeure provision should be added to increase flexibility in the event of disasters. Rather than establishing a general provision in advance that could give rise to uncertainty and argumentation, the Commission will leave open the possibility of making adjustments as needed if exigent circumstances arise.

f. Role of NYSERDA

Although NYSERDA's role will be intermediary, NYSERDA will take title to RECs (including as a result of the 2016 solicitation and all other solicitations going forward) and will need initial capitalization as well as assurance against financial risk. Unlike the RPS, which operates on a pre-established budget, RES procurement will be driven by supply and demand and the total procurement expenditures in any given cycle will not be known beforehand. Although the financial risk to NYSERDA will be relatively small, it may nevertheless require a guarantor. The distribution utilities may be best situated to provide this service, subject to cost recovery from ratepayers

and accordingly are required to do so.[81] Staff will consult with NYSERDA and develop for Commission consideration as part of an implementation proposal a plan for providing appropriate capitalization and cash flow for NYSERDA's role and to establish an equitable mechanism for distribution utilities to provide the necessary financing and guarantees, as necessary.

6. Solicitation/Procurement Cycle

There is considerable discussion in the record on the importance of establishing annual targets for REC contract solicitations. Renewable energy developers were uniform and clear that knowing the specifics of the State's procurement plan well in advance allows them to engage in the pre-development activities that yield the advantages of competition. Developers and others also pointed to the fact that historically the uncertainty around the timing and level of NYSERDA renewable solicitations reduced their interest and ability to compete and provide value to consumers. Developer and investor confidence will be critical to success moving forward. The Commission will require scheduled annual solicitations so that developers can prepare their participation.

Annual procurement targets must be established on a forward-looking basis that accounts for the typical lead time needed to develop projects and bring them into operation. Factors to be considered include:

- The amount of investment that can be driven by spot REC markets, and voluntary market activity whether based on REV market activity or customer initiatives intended to be additional to an LSE's compliance requirements;

[81] In furtherance of the ongoing effort to reduce the cost of compliance, NYSERDA should consider and present any options by which the costs associated with the development of a Tier 1 resource and therefore the cost of RECs can be reduced through securitization.

- Expected attrition, i.e., the rate at which executed contracts may fail to result in constructed projects;
- Time-lag and uncertainty in bringing projects into operation; and
- Likely development rates of policy-driven projects; and
- Whether NYPA and/or LIPA will be participating in NYSERDA's procurement process.

In contrast to RPS procurement, NYSERDA's procurement under the RES will be more predictable and reliable from the developers' standpoint thereby enabling the commitment of resources to actively participate in the New York market. Instead of being budget-bounded, RES procurements will be driven by a process that is predictable with established dates for solicitations, fixed targets and clear procurement goals set forth in both the compliance and procurement schedules. To that end, the Commission requires that no less than one solicitation will be conducted during the first half of each calendar year. If the solicitation acquires less than the minimum procurement target for that year, it will be followed by a second solicitation within the same calendar year. For the 2017 procurement period NYSERDA shall establish and publish on its website no later than December 1, 2016, a firm schedule of fixed dates for the annual and potential supplemental solicitations. Details regarding the procurement process from 2018 and following will be addressed in an implementation proposal and order.

The initial Anticipated and mandated Minimum procurement targets for years 2017-2021 will be as follows:

Year	Distribution Utilities & ESCOs	LIPA	NYPA	Direct Customers	Anticipated Procurement Target (MWh)*
2017	1,424,555	242,766	281,087	18,041	1,966,449
2018	1,464,801	249,624	289,028	18,551	2,022,004
2019	1,505,047	256,483	296,969	19,061	2,077,560
2020	1,545,293	263,342	304,911	19,570	2,133,116
2021	1,585,539	270,200	312,852	20,080	2,188,671

* Assumes that NYSERDA will be procuring RECs for NYPA and LIPA customer loads. In the event that NYPA and LIPA do not participate in NYSERDA's procurements, the procurement targets will be adjusted accordingly by reviewing the NYPA or LIPA portions shown in this table.

Year	Distribution Utilities & ESCOs	LIPA	NYPA	Direct Customers	Minimum Procurement Target (MWh)*
2017	1,282,099	218,489	252,978	16,237	1,769,804
2018	1,318,321	224,662	260,125	16,696	1,819,804
2019	1,354,542	230,835	267,272	17,155	1,869,804
2020	1,390,764	237,007	274,419	17,613	1,919,804
2021	1,426,985	243,180	281,567	18,072	1,969,804

* Assumes a 10% attrition rate from the Anticipated Procurement Target

7. Procurement Guidelines

Staff, in consultation with NYSERDA, will propose procurement guidelines for consideration by the Commission as part of the implementation plan. As a default, the part price, part economic development scoring that was previously used in RPS REC contract solicitations for comparing bids shall be

incorporated into the proposed guidelines unless it can be demonstrated to be ineffective. In addition to cost and deliverability, the following additional factors at a minimum should be considered for inclusion in the guidelines and evaluative criteria that will guide selection of projects:

- Viability of the project;
- Time frame for bid acceptance to operation;
- Diversity of resources of the overall portfolio;
- Diversity of owners;
- Alignment with REV goals specified in procurement solicitations;
- Project developer experience; and
- Non-cost economic benefits.

B. Tier 2

Staff proposes that Tier 2 be subdivided between Tier 2a representing renewable resources that are eligible to compete in other states' procurements, and Tier 2b representing renewable resources with no opportunities, likely due to vintage, to sell their resources outside of New York. The distinction is primarily based on concerns that without New York support, facilities with the option to do so will sell their resources into other states' REC programs thereby limiting New York's ability to benefit from them. Concern was also expressed that even with the low level of New York payments proposed by Staff under Tier 2b, the clean energy attributes of certain small hydroelectric facilities in the Tier 2b category would be at risk because the facilities might fail financially and retire for the lack of sufficient overall revenues. Under the RPS program, such small hydroelectric facilities were eligible for

maintenance contracts to ensure preservation of their clean energy attributes.

The facilities that Staff proposes to classify under Tier 2a have all likely already recovered all or most of their initial capital costs and only need to obtain market revenues sufficient to fund their comparatively low, going-forward operation and maintenance costs. These are primarily wind generation facilities that have no fuel costs unlike other large scale electric generation facilities and should be profitable even under today's lower market prices for energy and capacity. While it may be possible that some of these facilities will sell their clean energy attributes into other states, given vintage and delivery requirements in other states it remains merely hypothetical that there will be a mass flight of these resources. Therefore, at this time, there is no imminent risk of losing the emission attributes associated with these facilities permanently and no concomitant need to provide them with additional New York consumer support for those emission attributes. In the event that significant out-of-state sales occur to the detriment of the RES program, the Commission will reconsider the need to compete for these resources in one of the triennial reviews prior to 2030. The Tier 2a concept is not adopted.

Staff’s proposal for Tier 2b includes facilities that by definition do not have competitive opportunities outside of New York because of their size and location. There is no need for a Tier 2b except for the concern that the clean energy attributes of these facilities may be at risk because they may fail financially and retire for the lack of sufficient overall revenues due to the failure of markets to fully internalize the value of their clean energy and fuel diversity benefits. Rather than adopting Staff’s Tier 2a and 2b proposal, the Commission

will instead generally renew the RPS maintenance program in a new Tier 2 of the RES.

Eligibility for the new Tier 2 is limited to run-of-river hydroelectric facilities of 5 MW or less; wind facilities; and biomass direct combustion facilities that were in commercial operation any time prior to January 1, 2003, and were originally included in New York's baseline of renewable resources calculated when the RPS program was first adopted. Each facility seeking funds under this Tier 2 will be required to demonstrate that but for the maintenance contracts, the facility will cease operations and no longer produce positive emission attributes. Maintenance Contracts will be provided on a case-by-case basis and relief will be tailored to the situation presented. The criteria and process for determining eligibility of the facilities is set forth in Appendix D. Eligible costs, which are expected to be limited in relation to the other Tier costs, would be recovered from delivery customers in the same manner as in the RPS Program Maintenance Tier, or from such other sources as the Commission shall determine. Staff will review the current maintenance program, including the eligibility criteria, and propose any changes for consideration as part of the implementation phase.

C. Periodic Review

1. Triennial review process

Beginning in 2020 and each third year thereafter, the Commission will conduct a review of the CES initiative. The triennial review is an integral part of the program, establishing fixed targets on a going-forward basis to provide certainty to market participants. Triennial review will include a divergence test, i.e., an examination of the balance between mandated demand and anticipated supply. Criteria for the divergence test will be developed in the implementation phase.

The divergence test will affect the setting of the targets and will also be used to evaluate the effectiveness of centralized REC-only procurement as described above. The targets established in triennial reviews will also reflect the development of voluntary activity and the portion of the RES attainment wedge to be represented by voluntary activity in the subsequent procurement period. Other issues to be examined in the triennial review include:

- the effectiveness of compliance mechanisms including ACPs;
- changes to eligibility rules;
- application to microgrids and CHP;
- fuel diversity; and
- interactions with RGGI and the federal Clean Power Plan.

2. Interim review

Based on targets established in triennial review, markets bounded by ACPs will supply RECs within a reasonable cost range. As a safeguard against undersupply or oversupply imbalances, Staff will perform at least annually the divergence test which, if the test results fall outside of prescribed ranges, may trigger an interim review by the Commission. Interim review serves primarily as a safety valve against undersupply, but it should also consider potential oversupply situations. If serious imbalances develop, the Commission will consider taking corrective actions to maintain a reasonable level of price stability. Although interim review is an important safeguard, the triennial targets will be presumed reasonable and interim revisions will be undertaken only in unusual circumstances. Compliance flexibility measures

including the ACP should serve to mitigate most short-term divergences.

VII. ZERO-EMISSIONS CREDIT REQUIREMENT

A. Procedural Matters

Staff's White Paper filed on January 25, 2016, proposed that a Nuclear Tier be created to ensure that, to prevent backsliding from the State's efforts to limit greenhouse gas emissions, emission-free attributes from eligible operating nuclear generating plants are properly valued. Under Staff's White Paper proposal, each LSE would be obligated to purchase ZECs from nuclear facilities facing financial difficulty as determined by a Staff examination of the books and records of the facility at a price administratively set by the Commission and updated every year based upon the difference between the anticipated operating costs of the units and forecasted wholesale prices. Importantly, Staff characterized the proposed payments as only setting an appropriate and fair value of the environmental attribute independent of the actual wholesale prices for energy and capacity in the NYISO administered markets. Staff noted that plant owners had already announced the planned closure of the Ginna and FitzPatrick plants, that the Vermont Yankee nuclear plant was closed in December 2014 due to identical concerns, that it was announced that the Pilgrim nuclear power plant in Massachusetts would be closed for similar reasons, and that the economic pressures facing Ginna and FitzPatrick also apply to the Nine Mile Point 1 and 2 plants.

Additional reductions in the price of natural gas occurred during the time between when Staff prepared its analysis and then filed its White Paper. On February 24, 2016, the Commission issued an order further expanding the scope of the CES proceeding and seeking additional comments expressing

its concern that the need for support to maintain the zero-emissions attributes of the nuclear plants is reaching a critical turning point such that expedited action is necessary.[82] The Commission noted that nuclear power plant operation is highly dependent on pre-scheduled fuel cycles, therefore certainty as to the availability and level of maintenance support may be critical to the decision of plant operators to order fuel and commence future cycles, and that these practical operational considerations create urgency that it is likely desirable to put an expedited maintenance support system in place. Attached to the February 24, 2016 order was a secondary proposal for expedited maintenance contracts that was intended to be simpler to implement pending the resolution of the proposed broader program.

In response to the expedited maintenance contract proposal, Entergy remained steadfast in its position that no ZEC program, expedited or not, would cause it as the owner of the FitzPatrick nuclear plant to keep that facility open.

In anticipation that the Commission might approve the expedited maintenance contract proposal, Constellation filed a petition to initiate a proceeding to establish the facility costs for the Ginna and Nine Mile Point nuclear power plants. Case 16-E-0270 (the Constellation Case) was established to consider the petition. That case is being heard here on a common record with Case 15-E-0302, the CES case. The parties in the Constellation Case had an opportunity, pursuant to a protective order to preserve the confidentiality of the commercially sensitive financial details, to participate in

[82] Case 15-E-0302, Clean Energy Standard, Order Further Expanding Scope of Proceeding and Seeking Comments (issued February 24, 2016).

technical conferences examining the confidential financial data of the Ginna and Nine Mile Point nuclear power plants.[83]

Among the many comments received on Staff's White Paper and the expedited maintenance contract proposals, Entergy, the owner of the FitzPatrick and Indian Point nuclear plants, proposed an option of using the social cost of carbon to set the fair value of the environmental attribute as a method to better keep the ZEC price independent of the actual wholesale prices for energy and capacity in the NYISO administered markets than Staff's originally proposed differential between the anticipated operating costs of the units and forecasted wholesale prices. Entergy proposed that its methodology be applied to all nuclear plants. Despite its proposal, Entergy reiterated that no program would cause it as the owner of the FitzPatrick nuclear plant to keep that facility open. Constellation proposed a similar methodology as a back-stop in the event the original methodology failed for any reason. Many of the comments expressed concern that any encouragement by the State of the production of clean generation must be by a methodology that is "untethered" to a generator's wholesale market participation, but that federal law on what measures are or are not untethered is currently unclear, creating an element of risk for any kind of program.

After consideration of the many comments that were received, Staff prepared and filed on July 8, 2016, Staff's Responsive Proposal. A notice and additional ten-day comment period was provided for parties to comment on Staff's Responsive

[83] Public Citizen Inc. requests that the owners of the nuclear power plants make available full unredacted balance sheet data so that the public can have a better understanding of their profit and so that ZECs can be properly formulated. Pursuant to the protective order, it could have had access to that data if it had participated in the Constellation Case.

Proposal, which was extended to become a full two-week additional comment period. A number of individuals and entities have asked for even more time to comment for the sake of broader participation.

In correspondence with the Secretary about the need to act expeditiously, Constellation, as the owner of R.E. Ginna and Nine Mile Station nuclear electric generating facilities, asserts that it must make critical, multi-million dollar business investment decisions by September 2016 regarding the future of its nuclear facilities that have been losing money, and that those decisions cannot be made in reliance on a mere proposal. According to Constellation, its decision regarding the investment of approximately $55 million to refuel Nine Mile Unit 1 is already overdue if the facility is to be kept in service at the end of the current fuel cycle, and it must make a final decision whether to order fuel no later than the end of September 2016. Additionally, Constellation must file a notice of its intent to continue commercial operations with the Commission by September 30, 2016, and will incur substantial capital recovery balance costs if it does not intend to retire the Ginna facility at the expiration of the current Reliability Support Services Agreement supporting the facility. Constellation states that it will need a contract in hand by September 2016; therefore an order is needed from the Commission by August 1, 2016, to allow sufficient time to finalize a contract for the zero-emission attributes. Constellation also suggests that if there is any hope of saving the James A. FitzPatrick Nuclear Power Plant, the owner must also soon make near-term investment decisions, including a refueling determination. Constellation's subsidiary Exelon Corporation is in discussions with Entergy Corporation to purchase the FitzPatrick facility.

The Notice Extending Comment Period[84] to a full two-week period explained, among other things, the difficult balance between the desire for parties to have sufficient time to prepare their comments and the need to avoid implementing procedures that would defeat potential important Commission objectives or options in addressing the significant policy questions that must be decided. The extensive reasoning on all matters as set forth in the Notice is reaffirmed here and supports the need for the Commission to proceed with deliberate speed and without further extensions of the comment periods.

Regarding the facility cost matters in the Constellation Case, AGREE asserts 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 ZECs. AGREE believes Staff's Responsive Proposal proves their concerns correct in that Staff proposes a price-setting mechanism irrespective of plant operating costs. MI similarly asserts that the parties should not be expected to address Constellation's projected operating costs in detail given the fact that Staff's Responsive Proposal, if adopted, would render such costs meaningless, but 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 payments that may be awarded.

The parties are correct that the methodology in Staff's Responsive Proposal (later adopted herein with some modifications) does not rely on a detailed finding of the exact costs to operate the affected nuclear plants as might have been

[84] Case 15-E-0302, Clean Energy Standard, & Case 16-E-0270, Constellation Energy Nuclear Group LLC - Facility Costs, Notice Extending Comment Deadline (issued July 15, 2016).

done in a cost-of-service approach, therefore there is no need for further investigation or comments on the detailed costs. But the Commission notes that the in-depth examination of costs did reveal significant information confirming the Commission's concerns that the zero-emissions attributes of the upstate nuclear plants, are at serious risk absent a program to value and pay for the attributes. The Commission is aware that Staff in particular is extremely grateful to the parties that participated in the Constellation Case for the insight they brought to assist Staff in its examination.

B. Public Necessity

Staff proposes that the ZEC program provide a ZEC payment where there exists a public necessity to preserve the zero-emissions environmental attributes of a nuclear generating facility. Staff further proposes that public necessity be determined on a plant-specific basis at the discretion of the Commission, using criteria the Commission finds to be reasonable, on the basis of (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.

1. Verifiable Historic Contribution

There does not appear to be any dispute that the FitzPatrick, Ginna, and Nine Mile Point nuclear generation facilities have all made verifiable historic contributions to the clean energy resource mix consumed by retail consumers in New York State regardless of the location of the facility.[85] Their unit-specific contributions are well documented in numerous NYISO reports as well as in the DPS-administered Environmental Disclosure database. The Commission finds that these facilities have provided a significant verifiable contribution to New York State's clean energy resource mix as consumed by New Yorkers.

2. Inadequate Compensation to Preserve Attributes[86]

The Commission accepts Entergy's commercial decision to close the FitzPatrick nuclear generating facility, evidenced by the filing of a Notice of Intent to Retire with the Secretary on November 2, 2015, as proof that the owner was receiving inadequate compensation to ensure that the zero-emissions attributes of the facility will be preserved and that the risk of losing those attributes is a certainty without action by the Commission. In the Constellation Case that makes up a part of the record in these proceedings, the Commission, Staff, as well as other interested parties, have reviewed financial data from the Ginna and Nine Mile facilities. The Commission has already authorized the Ginna facility to retire without further action

[85] The Indian Point nuclear generation facility has also made verifiable historic contributions, but is not included further in this discussion because its zero-emissions attributes are not currently at risk. The owner of Indian Point has not claimed that the zero-emissions attributes of the Indian Point facility are currently at risk.

[86] Units in single ownership located in the same NYISO Zone and that share costs at the same site are treated as a single facility for the determination.

from the Commission in 2017.[87] The information demonstrates that the projected revenues fall well short of anticipated costs, which seriously jeopardizes the preservation of the zero-emissions attributes of these facilities.

3. BCA in Relation to Alternatives

Considering the anticipated costs of the ZEC program against the benefits related to the large amount of zero-emission power the facilities will produce,[88] the benefits clearly outweigh the costs. Indeed, during the first two years of the program, the total attribute payments are calculated to be up to $965 million, achieving a carbon-alone benefit of $1.4 billion. If more of the value of the carbon-free attributes becomes internalized into the forecasts of energy and capacity prices in New York, as expected, it will result in reductions of the ZEC attribute payments adopted here. Further, given that the model adopted here locks in 12 years of significant carbon emission reductions at a fraction of the benefit to be achieved, New York customers will continue to benefit for years to come.

AGREE and NIRS suggest that because the marginal cost of additional increments of energy efficiency compares on a cost basis favorably with ZEC unit costs, it provides an alternative to nuclear plant retention. As noted elsewhere in this Order, the Commission is working to ensure that the potential of energy efficiency is maximized in New York. However, it is simply unrealistic to assume that sufficient additional energy efficiency measures could be identified and implemented in time to offset the 27.6 million MWh of zero-emissions nuclear power

[87] Case 14-E-0270, Proposal for Continued Operation of the R.E. Ginna Nuclear Power Plant, LLC., Order Adopting the Terms of a Joint Proposal (issued February 24, 2016), pp. 29-30.

[88] Upstate New York nuclear-power generating facilities are expected to produce approximately 27.6 million MWh of zero-emissions power per year.

that would need to be replaced per year. For example, even if the incremental energy efficiency rate could be increased by 25% per year above the projected rate, only 13% of the cumulative zero-emissions MWh produced by the nuclear plants would be offset during the 12-year duration of the program. To offset all of the cumulative zero-emissions MWh the annual incremental rate of energy efficiency would have to be tripled to 6.6 million MWh per year.

The marginal cost of additional increments of renewable resources is expected to always be significantly higher than ZEC prices. In periods where market revenues are expected to be low, both ZEC and REC prices will tend to be high, with REC prices projected to be higher than ZEC prices. In periods where market revenues are expected to be high, ZEC prices will fall, perhaps all the way to zero, but REC prices, while lower too, may not. In any event, under the RES the Commission is pursuing new renewable resources at an ambitious pace. As in the case of energy efficiency, it is not realistic to assume that sufficient additional renewable resources at a reasonable price or perhaps any price could be identified and implemented in sufficient time to offset the 27.6 million MWh of zero-emissions nuclear power per year. For example, replacing all the 27.6 Million MWh of zero-emission energy with renewable resources would require 9,000 MW of onshore wind or 22,000 MW of solar deployment. It is virtually impossible to deploy this magnitude of resources in the short-term.

4. Cost Impacts on Ratepayers

The Commission has reviewed the potential customer bill impacts of these investments and finds them to be reasonable, particularly in the context of today's historically low commodity costs. The expected bill impact for a residential customer using the statewide average monthly usage of about 600

kWh is less than $2 per month in the first tranche. Since the cost of maintaining the zero-emissions attributes of the nuclear plants will be recovered on a volumetric energy consumption basis from all the LSEs, the expected impact on the State's higher load factor commercial and industrial customers will be higher and vary depending on their level of energy intensity. Such customers frequently benefit from low-cost power and/or reduced delivery charges resulting from their participation in various economic development programs offered by the utilities or NYPA. Additionally, the future ZEC prices can decline if market energy and capacity price forecasts go up; perhaps all the way to zero.

5. Overall Public Interest

Retention of the zero-emissions attributes of New York's upstate nuclear plants would avoid the emission of approximately 15 million tons of carbon per year. Losing the carbon-free attributes of nuclear generation, before the development of new renewable resources between now and 2030, would undoubtedly result, based on current market conditions, in significantly increased air emissions due to heavier utilization of existing fossil-fueled plants or the construction of new gas plants. The added emissions would complicate the State's compliance with likely federal carbon standards and would result in dangerously higher reliance on natural gas, radically reducing the State's fuel diversity and making consumers more vulnerable to natural gas and concomitant electric price spikes.

Applying the public necessity criteria described above, the Commission determines that there is a public necessity to provide ZEC payments to the FitzPatrick, Ginna and the Nine Mile Point facilities. The Commission finds that it is in the public interest to provide these ZEC payments for the purpose of maintaining the emission-free attributes because

there are insufficient zero-emission alternatives available to replace them any time soon. Retention of the upstate nuclear facilities would also help maintain fuel diversity and fuel security. The facilities in question represent significant investment in infrastructure, are operational, and have excellent safety records.

This determination of necessity in no way undermines the Commission's commitment to meeting the SEP's goal of having 50% of the State's electricity be generated by renewable resources by 2030. As Staff's proposal makes clear, the obligation of LSEs to purchase ZECs will be independent of the obligations imposed herein to encourage generation utilizing renewable resources. Ideally, as markets and technologies develop and more renewable generation becomes available, nuclear power could be replaced by those alternatives. In the near-term, however, the Commission is convinced that it is essential to keep these zero-emissions attributes available for New York consumers.

AGREE characterizes the ZEC proposal as contrary to the Commission's action in 1996 of divesting generation from utilities, where the Commission acted to shield ratepayers from the economic risks of failing power plants. This is an entirely different situation. The ZEC proposal does not leave the stranded costs of a closed facility on the shoulders of ratepayers. Quite to the contrary, it provides a mechanism to preserve the zero-emissions attributes these facilities are providing. Qualifying facilities will be paid for the value of the ZEC attributes, not reimbursed for costs stranded by their market position.

C. ZEC Price Formula Mechanics

Staff proposes that the ZEC contracts be administered in six two-year tranches with the price paid for the ZECs being

updated for each tranche pursuant to a set formula that provides certainty as to how the prices will be set. Staff proposes that the Tranche 1 ZEC price be based upon the average April 2017 through March 2019 projected SCC as published by the USIWG in July 2015 (nominal $42.87/short ton). The proposal then subtracts a fixed baseline portion of that cost that is 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 prices embedded in the CARIS Phase 1 report (nominal $10.41/short ton).[89] This yields a Tranche 1 net cost of carbon of $32.47 (nominal $/short ton), and a ZEC price of $17.48 per MWh.[90]

The Commission notes Staff's caveat that this approach may not make sense for establishing a ZEC price for the downstate Indian Point facility because of its location. Indian Point is located in an area of higher electric system constraints and has a much higher level of market revenues. At this time, the Indian Point zero-emissions attributes are not at risk. However, the Commission reserves the right should the Indian Point attributes become at risk, 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.

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[89] The need for an administratively determined price results from too few owners of the affected facilities for there to be a valid competitive process.

[90] Staff's Responsive Proposal provided detailed calculations behind this price. They are also provided in Appendix E.

Staff proposes that for the contract periods of Tranche 2 through Tranche 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 $39/MWh**	**=**	**ZEC Price ($/MWh)**

1. Social Cost of Carbon

Staff proposes that the Social Cost of Carbon component (nominal $$ per short ton of CO_2) would be fixed by tranche based on SCC estimates published in July 2015 by the USIWG, as follows:

Period	SCC
Tranche 2	$46.79
Tranche 3	$50.11
Tranche 4	$54.66
Tranche 5	$59.54
Tranche 6	$64.54

API expresses concerns about the certainty of the USIWG estimates because it believes they were not subject to a rigorous federal notice, review and comment process. MI characterizes the estimates as highly controversial and having not been subject to independent analysis or shown to be an accurate measure of savings if emissions are avoided. MI also notes that internalizing the SCC benefits society at large, not New York. NYC expresses concern that there is no link between the value of carbon and the ZEC payment needed to maintain the operation of the nuclear plants.

NYU Institute for Policy Integrity supports use of the SCC as the best available estimate of the marginal external damage caused by carbon dioxide emissions. Pace applauds the

proposal as an important first step in pricing the cost of carbon into energy consumption more broadly. Environmental Progress states that putting a monetary value on the benefits provided by zero emissions nuclear power derived from the federal government's estimate of SCC is a common-sense principle. The Indicated Joint Utilities state that basing the price of ZECs on the SCC, adjusted by removing the RGGI value embedded in rates, is a reasonable method to establish the emissions credit value that is not reflected in electric prices. CENG stated that compensating nuclear facilities based on the SCC is consistent with the programs' original environmental purpose and appropriately values the environmental attribute that nuclear facilities provide.

Indicated Suppliers (IS) argue that Staff's Responsive Proposal will significantly harm the NYISO wholesale competitive electricity market by artificially suppressing installed capacity (ICAP) prices thereby dis-incenting development of new capacity. Further, it claims that the proposal is a discriminatory and inefficient tool to meet the State's clean energy goals. As previously noted, FERC has determined that attributes credit payments do not interfere with wholesale competition. Instead, it argues that unless the RGGI emissions allowance cap is substantially reduced to increase RGGI auction prices to the level of the social cost of carbon, which is not anticipated in Staff's Responsive Proposal, all other resources in New York that provide carbon emissions reductions benefits will receive less than one fourth of the price that the uneconomic nuclear facilities receive for providing the same benefits.

IS is incorrect. The proposal is neither inefficient nor an attempt to artificially suppress wholesale prices. It does not establish wholesale energy or capacity prices, it only

establishes pricing for attributes completely outside of the wholesale commodity markets administered by NYISO. To the contrary, it addresses a well-recognized externality that otherwise would lead to economic inefficiencies with respect to the costs incurred due to environmental damage, in particular, climate change. Failing to adequately account for these costs has led the world's best scientists and economists to warn that inefficiencies caused by this externality will be significant unless action is taken immediately.[91] In this case, failing to recognize this externality will lead to the uneconomic loss of significant zero-emissions attributes. But such losses and the related permanent environmental damage, is unnecessary if the value of zero-emissions attributes is better recognized.

Further, IS's suggestion that the only solution is to reduce RGGI caps and raise RGGI prices to the federal SCC is flawed. It fails to recognize the alternative ways the State can improve on the status quo. Raising the RGGI price is not within the State's unilateral control and is clearly not the only way to incent clean generation and conservation in an efficient manner. Indeed, each of the RGGI States have renewable portfolio standards that they apply to supplement and help implement RGGI's overall objective of reducing carbon in electric supply.

The cost to consumers of reducing the RGGI caps until wholesale energy market prices increase by $17.48/MWh would be about $2.8 billion dollars in the first year alone, or almost

[91] See, e.g., IPCC, 2014: R.K. Pachauri and L.A. Meyer, "Climate Change 2014: Synthesis Report, Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change"; IPCC, Geneva, Switzerland, p. 151; William Nordhaus, The Climate Casino: Risk, Uncertainty, and Economics for a Warming World (New Haven: Yale University Press, 2013).

six times higher than the costs of Staff's Responsive Proposal (this could be partially offset by additional RGGI revenues). A residential customer using the statewide average monthly usage of about 600 kWh per month would see a bill increase of over $11 per month under this alternative. Meanwhile, the only incremental emissions reductions of this approach identified by the Independent Market Monitor would be the potential construction of a 300 MW gas-fired combined cycle plant on Long Island, which could provide lower emissions relative to existing, less efficient gas-fired units.[92]

Based on the comments received, the USIWG value of the SCC is the best available estimate and will be adopted. Notably, the USIWG value was developed by the Environmental Protection Agency in extensive coordination with other federal agencies. As noted earlier, the Commission has previously directed that avoided CO_2 emissions be valued at the SCC, less the RGGI value already internalized" in the bulk power market.[93] Those opposed to its use do not offer a method of setting ZEC prices by alternatively valuing the damage caused by carbon emissions. Instead, NYC and others propose different methodologies that fail to recognize the need to keep the ZEC pricing methodology untethered to a generator's wholesale market participation.

MI questions why future estimates of the SCC, which increase from year to year, then should be adjusted by inflation. The USIWG's SCC central values are expressed in constant 2007 dollars per metric ton, and reflects the federal group's estimation that the climate change damage caused by carbon emissions will increase over time. Staff correctly

[92] See 2015 State of the Market Report, pp. 17 and A-24.

[93] Case 14-M-0101, supra, Order Establishing the Benefit Cost Analysis Framework (issued January 21, 2016), p. 13.

inflated the 2007 values to nominal year values by using the gross domestic product implicit price deflator, since the purchasing power of the dollar is forecast to decrease over time.

MI also questions why the SCC values are based on a 3% discount rate when using a larger discount rate, such as 5%, would be more appropriate and less expensive. This issue has been previously settled in the BCA Order wherein the Commission adopted the central SCC values after consideration of party comments. Use of SCC values in the ZEC formula based on the central value 3% discount rate is approved consistent with the Commission's prior determination.

2. Baseline RGGI Effect

Staff proposes that the fixed baseline portion of the SCC already captured in the market revenues received by the eligible facilities due to the RGGI program be subtracted from the SCC at the same fixed amount for all tranches at a nominal $10.41/short ton. Staff notes that the energy price forecast part of the adjustment in the methodology would capture forward-going changes due to RGGI.

Some parties (e.g. MI, the Indicated Joint Utilities) urge that RGGI values not be held constant in future tranches. MI states that if RGGI allowances are reduced, the impact of RGGI on wholesale energy prices might be much higher in the future. The Indicated Joint Utilities agree with the approach of estimating RGGI values using the CARIS forecasts of RGGI prices, but offer that RGGI prices should follow the CARIS model to increase over time, either at the SCC escalation rate or the rate of inflation.

Staff's Responsive Proposal held RGGI prices constant in the ZEC price formula since increases in RGGI prices are expected to be reflected in the Forecast Energy & Capacity Price

Change Adjustment. The Commission agrees with Staff that inflating the RGGI offset in future tranches would constitute a double count when combined with the Adjustment. If for some reason increased RGGI prices failed to be reflected in Zone A energy price forecasts due to transmission constraints between upstate and downstate, the upstate nuclear units would receive reduced market revenues and therefore no additional offset to the SCC would be warranted.

3. Conversion Factor $$/Ton to $$/MWh

Staff proposes the use of a fixed 0.53846 conversion factor for all tranches to convert the SCC figures from $$/short ton to $$/MWh.[94] The conversion factor is based on the emissions rates of the mix of resources that would be avoided by the preservation of zero-emissions attributes. Indicated Joint Utilities believe the conversion factor used to reflect the quantity of carbon emissions avoided per MWh should be updated in future tranches to reflect changes that will occur in the resource mix.

While the Commission does not expect there to be radical swings in the resource mix over short time periods, the duration of the program is such that as cleaner resources enter the mix, continuing to use the current factor may overstate carbon value. The Staff Responsive Proposal utilized a marginal carbon emissions rate of 0.53846 short tons per MWh. This rate

[94] The 0.538456 is made up of contributions from natural gas, coal and oil on the margin. "The Benefits and Costs of Net Energy Metering in New York," Energy and Environmental Economics, Inc., December 11, 2015, p. 57, submitted December 17, 2015 in Case 15-E-0703 – In the Matter of Performing a Study on the Economic and Environmental Benefits and Costs of Net Metering Pursuant to Public Service Law §66-n.

was developed in the 2015 Net Metering Study[95] and measures the change in system emissions due to an incremental change in resources. The use of this rate is conservative, as the elimination of up to 27,618,000 MWh of nuclear zero-emissions attributes would likely lead to an increased reliance, at least in the near-term, on higher-emitting resources such as coal, oil, less efficient gas, and imports. Parties have pointed out that as the system mix changes, it may be appropriate to reduce the marginal emissions rate in the event that a significant amount of incremental renewable resources are built. The Commission agrees with this assessment, and believes that when setting the marginal emissions rate the formula must be forward-looking regarding the possible change in the rate that increasing amounts of renewable energy might bring about.

Given the forecasts under the RES, a material change is not expected to the marginal emissions rate due to additional renewable energy penetration in the near-term. However, beginning with Tranche 4, the total amount of renewable energy consumed in the State will be used to determine if a reduction in the marginal emissions rate is warranted. Tranche 4, which will cover the April 2023 through March 2025 time period, will use a marginal emissions rate based on the renewable energy consumed in the State during calendar year 2022. If this level is over 50,000,000 MWh, the marginal emissions rate 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.[96] Under this methodology, should the State

[95] See id.

[96] 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.

achieve a level of renewable energy consumed of 68,000,000 MWh (a level approximately 27,000,000 MWh above the 2014 baseline amount), the marginal rate will be 0.45 per MWh. This is a reasonable result, as an incremental 27,000,000 MWh of renewable energy would be approximately enough to replace all of the upstate nuclear plants' zero-emissions attributes. It is anticipated that this level of renewable energy usage would allow the marginal emission rate to reach a level consistent with natural gas units being on the margin.

For Tranche 5, the 2024 calendar year renewable energy level will be used (again, with a marginal emissions rate of 0.00491 per 1,000,000 MWh of renewable energy consumed above 50,000,000 GWh). For Tranche 6, the calendar year 2026 renewable energy level will be used. This approach will recognize the emissions impact of significant additional renewable energy, while providing a further incentive to ramp up renewable energy penetration New York.

4. Forecast Energy & Capacity Price Change Adjustment

For Tranches 2 through 6, Staff proposes to use 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 SCC) 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 that have liquidity and available data. 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 Capacity Calendar Month Futures projected by NYMEX for the period April 2017 through March 2018.[97]

Various parties (e.g. Nucor, AGREE) incorrectly interpret the $39/MWh baseline figure in the adjustment mechanism to be either an estimate of the market revenues that the upstate nuclear plants are currently receiving, or a floor price that they would be paid in the future for energy and capacity. Both of those interpretations are incorrect. Based on that misinterpretation, Nucor mistakenly concludes that the formula would result in combined market and ZEC payments to the upstate nuclear plants of $56.48/MWh (the sum of the $39/MWH Zone A market price forecasts and the $17.48/MWh ZEC price), or more forecasted revenue than Constellation requested in the Constellation Case for its Ginna and Nine Mile Point facilities.

The upstate nuclear units, which are located in NYISO Zones B and C, do not receive market energy revenues at the Zone A LMP price. Zone A was chosen as a reference price solely for the mechanics of the adjustment mechanism because of the availability of regular ICE and NYMEX forecasts based on sufficiently liquid transactions. That same quality of independent forecasts is not available for Zones B and C. It must be understood that the reference price forecast does not act within the formula to establish a quantity of energy and capacity revenues. As a deliberate intention, no part of the formula establishes energy or capacity prices or revenues. Rather, the Zone A forecasts are used in the Adjustment to measure only the change in independent forecasts over time.

A significant basis differential exists between the Zone A prices and the prices within Zones B and C at the

[97] See Appendix E.

connection points called "busses" where the revenues paid to the nuclear facilities are determined. A forecast of approximately $39/MWh at Zone A is inclusive of about $6/MWh equivalent for the capacity forecast for "Rest of State" based on recent 12-month forecast prices and about $33/MWh for energy. When the $33/MWh LMP forecast is adjusted for the recent 12-month basis differential between Zone A and the nuclear unit busses of about $6/MWh, the generator energy revenues forecast becomes only about $27/MWh. Notwithstanding the capacity price forecast of $6/MWh, if the most recent 12-month period actual capacity revenues of $3/MWh equivalent is utilized as potential revenue to the generator, then the total revenue the generator is expected to receive would be only $30/MWh at the relevant busses for energy and capacity.[98] The $56.48/MWh computed by Nucor should be $47.48/MWh (the sum of the $30/MWh at-the-busses market price forecast and the $17.48/MWh ZEC price). That forecasted level would be less than the level of revenue that Constellation requested in the Constellation Case for its Ginna and Nine Mile Point facilities.[99]

The Indicated Joint Utilities believe that it would be reasonable to include a basis differential update in the mechanism. It is true that the current level of basis could be

[98] Using a $3/MWh capacity price expectation is reasonable, rather than the $6/MWh capacity price referenced in the Staff Responsive Proposal, because at the time of the $6/MWh forecast, the market would have been factoring in the closure of both the Ginna and FitzPatrick plants. If these plants continue to operate, the capacity revenues will presumably be lower.

[99] In the Constellation case, the cost study presented was for Nine Mile and Ginna plants for a weighted average cost of $49.60/MWh. FitzPatrick cost data is not included and as it is a single unit facility, its costs would be higher than the blended average of the Nine Mile and Ginna plant costs, driving the total weighted average cost above $49.60/MWh.

an anomaly compared to historic lower levels. If the basis differential goes down, the revenue the generator would receive increases, all else equal. The formula could be adjusted to subtract the change in the basis differential from the $39/MWh reference price. While again, the Commission does not expect there to be radical swings in the differential basis over short time periods, the duration of the program is such that the formula should be updated in Tranche 4, half way through the contract period.

The basis differential is dependent on the electric system configuration and especially the congestion patterns in the region. There are efforts to address Western New York congestion and it is likely the basis differential will change in the future. However, these changes will not happen overnight and will take some time. 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 of 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 described in Appendix E.

5. Contract Duration

Comments were received from several parties regarding the duration of the ZEC requirement. The major theme of these comments was that if the Commission should approve a ZEC mechanism, the design and duration of the mechanism should be such that it can be modified or eliminated if market-based solutions develop or if the energy resources in New York are such that supporting the nuclear facilities is no longer

necessary. MI and some others suggest that in future tranches, the Commission should review whether the public interest criteria would still be satisfied.

Of those that indicate a preferred duration of the ZEC requirement, MI advocates for the shortest time period. It states that a time period of two years, or ideally no longer than the refueling cycles of the plants (e.g. 18-to-24 months), would be best. MI points out that the energy markets are continually evolving, so customers should not be locked into binding agreements through March 2029. MI also states that energy and capacity prices may not act in a manner which would lead to Staff's Responsive Proposal making sense over the full 12 years.

Like MI, Nucor is concerned with the proposed 12-year duration of the ZEC mechanism and states that the term of the program should not extend beyond 2020. Nucor urges that the proposal only lead to a bridge to a market-compatible approach. Nucor states that by 2020, it would be possible to revise NYISO's market-based tariff products and implement a new ZEC requirement that would be consistent with the revised market-based tariffs.

National Grid proposes a period of six years for the ZEC mechanism. It counsels that this time period is long enough to provide the nuclear plant owners with a reasonable level of financial certainty, while giving the Commission time to reassess if the nuclear plants are even still needed. National Grid expresses concern that a 12-year contract could delay the transition to a post-nuclear future which will be based on renewable energy. Further, National Grid says that market-based solutions to keeping the nuclear plants open could be developed, negating the need for the ZEC requirement.

The Indicated Joint Utilities do not propose any specific duration for the ZEC requirement, but agree that it was important to build in the flexibility to respond to future wholesale market and CO_2 allowance market development. Similarly, Pace states that the mechanism should be flexible so that given the State's evolving energy resource mix, it does not continue past the point where it is needed.

The Commission approves the 12-year duration for the program in six two-year tranches. As in the case with the RES, durability is important to the program's success. Under the RES program developers of new renewable facilities are to be offered 20-year REC contracts to provide sufficient certainty to induce them build new generation facilities. Just as it is unreasonable to expect an investor to make a long-lived capital investment without a revenue stream that is durable and certain, a purchaser will not invest in FitzPatrick without similar assurances. In the case of FitzPatrick, the magnitude of the risk taken on in the investment far exceeds refueling costs and capital improvements because a new owner must assume the risks of the ownership as part of the transaction. Given the continuing significant long-lived investments required for all of the units, a long-term contract providing certain terms is warranted. The long duration also has the considerable benefit of ensuring that the zero-emissions attributes will be preserved for a considerable period of time to give the RES program an opportunity to provide new renewable resources on a scale necessary to prevent backsliding on carbon emissions. The 12-year duration however 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. Similarly, 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.

The Commission also agrees and determines that the design and duration of the mechanism shall be such that it can be modified or eliminated by the Commission if there is a national, 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 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.

6. Contract Performance

Staff proposes that 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 facility has made to the clean energy resource mix consumed by retail consumers in New York State. Staff further proposes that each facility 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. Finally, Staff proposes that the obligation to produce be enforced by appropriate financial consequences for failure to produce. Some parties have also advocated that the contract

between NYSERDA and the generators should include performance factors to hold the generators accountable for performance.

While the verifiable historic output of zero-emissions MWhs of the FitzPatrick, Ginna, and Nine Mile Point facilities has varied from year to year, the sum of the most recent four quarters of production, July 2015 through June 2016, is the most recent and is a reasonable measure of their output and will be applied as the MWh cap on an annual basis requested by Staff. Therefore, the amount of ZECs to be purchased on an annual basis will be capped at that amount, which sums to 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 all be combined and treated as a single group.

Clearly the mechanism that pays for ZECs on a per unit output basis provides incentives for the generators to maximize output. These plants have been performing at a very high level of performance. The intent of the ZEC program is to preserve the zero-emissions attribute benefits of the facilities to prevent backsliding in the State's carbon reduction performance that likely could not be avoided in any other way. However, the scale of the investment being made warrants further protections against poor short-term performance. 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.

7. Facility Closure Contingency

Should any of the three facilities (FitzPatrick, Ginna and Nine Mile Point[100]) 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

[100] 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.

be pro-rated within a tranche period to the date upon which the facility permanently ceased producing zero-emissions.

8. LSE Obligations and Allocations

Staff proposes that each LSE, including NYPA and LIPA, be required to encourage the preservation of the environmental values or attributes of qualified zero-emissions nuclear-powered electric generating facilities for the benefit of the electric system, its customers and the environment by purchasing an amount of ZECs per year of the total amount of ZECs purchased by NYSERDA in proportion to the electric energy load served by the LSE in relation to the total electric energy load served by all LSEs in the New York Control Area. The ZECs obligation is separate from any obligation on LSEs to encourage generation utilizing renewable resources.

MI and Nucor raise concerns regarding the volumetric cost allocation, pointing out that nuclear costs have traditionally been recovered through delivery rates (physical plant) and energy prices. MI and others urge that NYPA customers should not pay any ZEC cost, as they have the ability to leave the State and go where there is no subsidy for the nuclear plants. They state that NYPA rates are for economic development, and such rates have not traditionally been charged for similar subsidies (e.g. SBC, RPS). Similarly, NYAPP urges that municipal and cooperative utilities should be exempted from the obligation to purchase ZEC's from NYSERDA based on the Commission's long-standing recognition of the unique nature of municipal utilities and co-op's which in the past has resulted in exemption from similar policies. 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. NYAPP urges that the same rational applies to the Clean Energy Standard in

general and ZEC's in particular because as a group, 86% of NYAPP energy comes from renewable resources, namely NYPA's Niagara Project. NYAPP says that it has demonstrated that it 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.

NYPA commented that given the importance of retaining nuclear resources for New York's clean energy and emissions reduction goals, and subject to any directive from its Board of Trustees following finalization of the initiative, NYPA fully intends to comply with the Staff Responsive Proposal. LIPA also supports Staff's Responsive Proposal stating that LIPA staff intends to seek the approval of its Board of Trustees and applicable regulatory authorities to enter into the necessary agreements to procure its appropriate share of zero-emissions credits and to receive its appropriate share of such revenues as a co-owner of the Nine Mile Point 2 Nuclear Station, in accordance with the requirements to be adopted by the Commission.

AGREE urges exemption of customers who have voluntarily purchased extra renewable resources above and beyond that prescribed by the Clean Energy Standard as forcing these customers to pay for ZEC's on top of the premium for renewable resources will reduce the amount of funds they would have otherwise spent on renewable power and be a disincentive to voluntarily purchase additional renewable resources that would run counter to the State's clean energy goals. Similarly, ClearChoice Energy, an ESCO, 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 proposes a narrow exception that would exempt ESCOs that provide 100% renewable energy to their customers. AGREE also opposes allocating ZEC purchases based on electric usage that will impose costs on downstate consumers who will receive few direct benefits due to transmission constraints.

PULP asserts that the program places disproportionate costs on low-income and fixed-income customers and that more weight should be given to avoiding bill impacts and to avoid undermining the newly created statewide low-income/fixed-income rate reduction program.

The Commission has considered the requests for exemptions and is of the opinion that the threat to the preservation of the zero-emissions attributes of nuclear facilities is a general threat that affects all ratepayers and is of such a scope that the costs of protection should be spread as broadly as possible. The ZECs program obligation on LSEs is a separate obligation from the RES and is not satisfied by supporting renewable resources of whatever quantity. Applying the obligation on a volumetric basis is a rational and the most appropriate basis to broadly allocate the costs given the nature of carbon emissions that are a creature of the volume of electric generation and consumption. The Commission is instituting this program to prevent widespread damage from carbon emissions that affect everyone. It is fair and appropriate for all consumers to participate. Accordingly, the Commission directs each LSE that serves end-use customers in New York, beginning April 1, 2017, for the benefit of the electric system, its customers and the environment, to purchase the

percentage of ZECs purchased by NYSERDA in a year that represents the portion of the electric energy load served by the LSE in relation to the total electric energy load served by all such LSEs. LSEs will make ZEC purchases by contract with NYSERDA and will recover costs from ratepayers through commodity charges on customer bills.

9. Conclusion

Staff's research, the comments received in this proceeding and the Commission's review of the arguments made all point the Commission toward an undeniable conclusion that preservation of the zero-emissions attributes of New York State's existing upstate nuclear facilities in the near future is crucial in the strategy to fight climate change and to achieve New York State's commitment to reduce carbon emissions. Further, as Staff points out, the benefits of maintaining these attributes far outweighs the costs.

The Commission finds Staff's Responsive Proposal, in which it recommends paying ZEC payments to zero-emissions attributes based upon the social cost of carbon to be fully consistent with the Commission's approach in setting guidelines for Benefit-Cost Analysis.[101] As emphasized by the Institute for Policy Integrity, the value of avoided carbon emissions is most accurate if tied to the value of the avoided external damage, or the value of avoiding the carbon emissions that would be emitted

[101] Case 14-M-0101, Reforming the Energy Vision, Order Establishing the Benefit Cost Analysis Framework (issued January 21, 2016), pp. 17-19.

if zero-carbon generators are replaced by other generators.[102] Further, this model more closely ties the pricing mechanism for ZECs to the environmental attribute, leaving no doubt that it falls squarely within the State's exclusive jurisdiction. Therefore, the Commission adopts Staff's Responsive Proposal, as modified and set forth in Appendix E, for a mechanism and a price for zero-emissions attributes of nuclear zero-carbon electric generating facilities where public necessity to encourage the continued creation of the attributes is demonstrated. This adoption of the Zero-Emissions Credit Requirement is a changed regulatory requirement for the purposes of the UBP.

Each Load Serving Entity is directed to enter into a contractual relationship with NYSERDA to periodically purchase ZECs during a program year based on initial forecasts of load and a balancing reconciliation at the end of each program year. In this manner, after the reconciliation process, each Load Serving Entity will have purchased the correct proportion of ZECs on an annual basis. In accordance with Staff's proposal, that ZECs will not be tradable except between NYSERDA and the Load Serving Entities during this balancing process.

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[102] Comments of the Institute for Policy Integrity, New York University School of Law (filed April 22, 2016), p. 16; see also, Reply Comments of Constellation Energy Nuclear Group, LLC Concerning Staff White Paper on Clean Energy Standard (filed May 13, 2016), p. 13. It is significant to point out that the cost of carbon-based approach for pricing RECs that appears in Staff's Responsive Proposal was proposed by these other parties in their comments to the White Paper. As more fully discussed with the July 15, 2016 Notice Extending Comment Deadline, supra, Staff's Responsive Proposal falls squarely within the issues that have been contemplated since the inception of this proceeding and within the scope of original Notice of Proposed Rulemaking issued in contemplation of the determinations made today.

As an alternative to contracting for ZECs with NYSERDA, LSEs and self-supply customers may seek permission from the Commission to meet their ZECs obligations by entering into combined ZEC plus energy and/or capacity contracts directly with the nuclear facilities. However, such proposals will be carefully scrutinized by the Commission to ensure that these alternate contracts will not unfairly shift ZECs costs onto other ratepayers.

The ZEC mechanism adopted in this Order is the best way for the State to preserve the nuclear units' environmental attributes while staying within the State's jurisdictional boundaries. ZECs provide a vehicle for monetizing the State's environmental preferences and the program will allow time for new clean energy technologies to mature and take their place in the ultimate generation mix. The independent renewable resource and ZEC obligations that together make up the CES each contribute uniquely to serving the long-term goal of achieving a largely de-carbonized energy system by the middle of the century.

VIII. IMPLEMENTATION

This Order adopts the Clean Energy Standard (CES) and establishes the policies that will govern the Renewable Energy Standard and the Zero-Emissions Credits Requirement. Given the need for momentum to implement the important initiatives adopted here, in many cases this Order establishes specific requirements to provide for swift implementation where necessary. But there are also a number of additional implementation measures that will be necessary to fully administer the CES. Those additional measures will be determined in an implementation phase that will address a number of issues identified in Appendix F, along with other implementation issues that may arise. Full implementation

will require various phases going forward and typically will involve a Staff or NYSERDA proposal, adequate notice, and the opportunity for comment before Commission action. The Commission intends that implementation matters will be addressed in a planned and deliberate manner to ensure that market participants receive timely guidance on matters that affect them.

IX. SEQRA FINDINGS

In February 2015, in accordance with the State Environmental Quality Review Act (SEQRA), the Commission finalized and published a Generic Environmental Impact Statement that explored the potential environmental impacts associated with two major Commission policy initiatives: REV and the Clean Energy Fund. On February 23, 2016, the Commission issued a Draft Supplemental Generic Environmental Impact Statement specifically relating to the CES and the establishment of a support mechanism to sustain the operations of eligible nuclear facilities. Seven entities submitted comments, and on May 19, 2016, the Commission adopted the Final Supplemental Generic Environmental Impact Statement (FSGEIS). In conjunction with the decisions made in this Order, the Commission has considered the information in the FSGEIS and FGEIS and hereby adopts the SEQRA Findings Statement prepared in accordance with Article 8 of the Environmental Conservation Law (SEQRA) and 6 NYCRR Part 617, by the Commission as lead agency for these actions. The SEQRA Findings Statement is attached to this Order as Appendix G. The SEQRA Findings Statement is based on the facts and conclusions set forth in the FSGEIS and the FGEIS. 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.

X. CONCLUSION

For the reasons stated above, and in accord with the discussion in the body of this Order, the Commission adopts a Clean Energy Standard consisting of a Renewable Energy Standard and a Zero-Emissions Credit Requirement program.

The Commission orders:

1. The goal of the State Energy Plan that 50% of New York's electricity is to be generated by renewable sources by 2030, as part of a strategy to reduce statewide greenhouse gas emissions 40% by 2030, is adopted as a foundational basis and essential component of the Clean Energy Standard.

2. The Clean Energy Standard consisting of the Renewable Energy Standard (RES) and the Zero-Emissions Credit Requirement, as described in the body of this order and in the appendices, is adopted.

3. Every Load Serving Entity (LSE) in New York State shall pursuant to Tier 1 of the RES invest in new renewable generation resources to serve their retail customers evidenced by the procurement of qualifying Renewable Energy Credits (RECs), acquired in quantities that satisfy mandatory minimum percentage proportions of the total load served by the LSE for the applicable calendar year as set forth herein. The compliance period shall be January 1 to December 31 of each year, beginning in 2017, and will continue annually, determined by multiplying the LSE's actual load for the year by the

percentage RES requirement for that year. LSEs may satisfy their obligation by either purchasing RECs acquired through central procurement by the New York State Energy Research and development Authority (NYSERDA); by self-supply by direct purchase of tradable RECs; or by making Alternative Compliance Payments to NYSERDA. Each LSE will demonstrate compliance through an annual compliance filing.

4. NYSERDA may offer RECs acquired in the 2016 Procurement for RES Tier 1 compliance and if NYSERDA determines that acceleration is warranted because the additional financial commitment would result in an overall weighted average award price of 2016 Main Tier projects equal to or less than the 2015 Main Tier weighted average award price of $24.57 per REC, it is authorized to implement additional procurement levels in the 2016 procurement and file a report with the Commission documenting its determination and the results.

5. For the Year 2017 compliance period, by December 1, 2016, NYSERDA shall publish on its website a REC price and the estimated quantity of the RECs NYSERDA will offer for sale in the 2017 compliance period. The REC price offered will equal the weighted average cost per MWh NYSERDA paid to acquire the RECs to be offered, plus a reasonable Commission-approved adder to cover the administrative costs and fees incurred by NYSERDA to administer Tier 1. NYSERDA will file a petition with the Commission proposing the amount of the adder by August 25, 2016.

6. By December 1, 2016 for the Year 2017 compliance period, NYSERDA shall publish on its website a per MWh ACP price for the 2017 compliance period. The ACP price will equal an amount calculated as the published REC price plus 10%.

7. By December 1, 2016 for the Year 2017 compliance period, each LSE will inform NYSERDA whether it intends to purchase RECs from NYSERDA during the compliance period.

8. For the 2017 procurement period NYSERDA shall establish and publish on its website no later than December 1, 2016, a firm schedule of fixed dates for the annual and potential supplemental solicitations.

9. Pursuant to Tier 2 of the RES, if the Commission awards Maintenance Contracts, eligible costs will be recovered from delivery customers in the same manner as in the Renewable Portfolio Standard program Maintenance Tier, or from such other sources as the Commission shall determine.

10. Every LSE in New York State shall purchase through contract with NYSERDA, at a price and by the terms described in this Order, an amount of zero-emission credits (ZECs) representing that LSEs proportional share of ZECs purchased annually by NYSERDA pursuant to the Zero-Emissions Credit Requirement. The LSE's proportional share is determined based on the proportion of electric energy load served by the LSE in relation to the total electric energy load served by all LSEs in the New York Control Area. The LSE/NYSERDA contractual relationship will require LSEs to periodically purchase ZECs during a program year based on initial forecasts of load and a balancing reconciliation at the end of each program year.

11. The compliance period shall be for two-year tranches commencing April 1, 2017 and will continue until March 31, 2029. Each LSE will demonstrate compliance through an annual compliance filing.

12. There being a public necessity to preserve the zero-emissions environmental attributes of certain Zero Carbon Electric Generating Facilities, NYSERDA shall offer long-term contracts for the purchase of ZECs from the FitzPatrick, Ginna

and Nine Mile Point generating facilities in accordance with the price, contract period and other terms specified in this Order. The contract terms shall conform to all of the requirements specified in this Order.

13. In the Secretary's sole discretion, the deadlines set forth in this Order may be extended. Any request for an extension must be in writing, must include a justification for the extension, and must be filed at least one day prior to the affected deadline.

14. Case 15-E-0302 is continued; Case 16-E-0270 is closed.

By the Commission,

(SIGNED) KATHLEEN H. BURGESS
Secretary

APPENDICES

Appendix A – Eligibility of Resources
Appendix B – Comment Summaries
Appendix C – New York Generation Attribute Tracking System
Appendix D – Renewable Energy Standard - Tier 2
Appendix E – Zero-Emissions Credits Requirement
Appendix F – Implementation Phase
Appendix G – SEQRA Findings Statement

Commissioner Diane X. Burman, concurring:

As reflected in my comments made at the August 1, 2016 session, I concur on this item.